



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : C07C 311/46, A61K 31/18, A61P 7/02		A2	(11) International Publication Number: WO 00/47553
			(43) International Publication Date: 17 August 2000 (17.08.00)
(21) International Application Number:	PCT/US00/03404	(81) Designated States:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(22) International Filing Date:	11 February 2000 (11.02.00)		
(30) Priority Data:	60/119,640	11 February 1999 (11.02.99)	US
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(54) Title: ALKENYL AND ALKYNYL COMPOUNDS AS INHIBITORS OF FACTOR Xa

(57) Abstract

Alkenyl and alkynyl compounds as potent and highly selective inhibitors of factor Xa isolated or assembled in the prothrombinase complex and compositions containing such alkenyl and alkynyl compounds are described. Such compounds show selectivity for factor Xa over other proteases of the coagulation e.g., thrombin, fVIIa, fIXa) or the fibrinolytic cascades e.g., plasminogen activators, plasmin). Methods for using such alkenyl and alkynyl compounds as diagnostic or therapeutic agents for prevention or treatment of a condition in a mammal characterized by undesired coagulation disorders, such as thrombosis, are also described.

Published

Without international search report and to be republished upon receipt of that report.

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ALKENYL AND ALKYNYL COMPOUNDS AS INHIBITORS OF FACTOR Xa

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority to U.S. Provisional Patent Application No.

- 5 60/119,640, filed on February 11, 1999, which is herein incorporated in its entirety by reference.

Field of the Invention

- The invention relates to novel alkenyl and alkynyl compounds, alone or as part of a composition, which are potent and highly selective inhibitors of factor Xa isolated
10 or assembled in the prothrombinase complex. Such compounds show selectivity for factor Xa over other proteases of the coagulation (*e.g.*, thrombin, fVIIa, fIXa) or the fibrinolytic cascades (*e.g.*, plasminogen activators, plasmin). The invention further relates to methods for using such alkenyl and alkynyl compounds as agents for preventing or treating a condition in a mammal characterized by undesired coagulation
15 disorders, such as thrombosis.

Background of the Invention

- Hemostasis, the control of bleeding, occurs by surgical means, or by the physiological properties of vasoconstriction and coagulation. Under normal hemostatic circumstances, the body maintains an acute balance of clot formation and clot removal
20 (fibrinolysis). The blood coagulation cascade involves the conversion of a variety of inactive enzymes (zymogens) into active enzymes which ultimately convert the soluble plasma protein fibrinogen into an insoluble matrix of highly cross-linked fibrin. Davie, E.J. *et al.*, "The Coagulation Cascade: Initiation, Maintenance and Regulation", Biochemistry, 30, 10363-10370 (1991). These plasma glycoprotein zymogens include
25 Factor XII, Factor XI, Factor IX, Factor X, Factor VII, and prothrombin. Blood coagulation follows either the intrinsic pathway, where all of the protein components are present in blood, or the extrinsic pathway, where the cell-membrane protein tissue factor plays a critical role. Clot formation occurs when fibrinogen is cleaved by thrombin to form fibrin. Blood clots are composed of activated platelets and fibrin.
30 Blood platelets which adhere to damaged blood vessels are activated and incorporated into the clot and thus play a major role in the initial formation and stabilization of hemostatic "plugs". In certain diseases of the cardiovascular system, deviations from normal hemostasis push the balance of clot formation and clot dissolution towards life-threatening thrombus formation when thrombi occlude blood
35 flow in coronary vessels (myocardial infarctions) or limb and pulmonary veins (venous

thrombosis). Although platelets and blood coagulation are both involved in thrombus formation, certain components of the coagulation cascade are primarily responsible for the amplification or acceleration of the processes involved in platelet aggregation and fibrin deposition.

- 5 Thrombin is a key enzyme in the coagulation cascade as well as in hemostasis. Thrombin plays a central role in thrombosis through its ability to catalyze the conversion of fibrinogen into fibrin and through its potent platelet activation activity. Under normal circumstances, thrombin can also play an anticoagulant role in hemostasis through its ability to convert protein C into
10 activated protein C (aPC) in a thrombomodulin-dependent manner. However, in atherosclerotic arteries these thrombin activities can initiate the formation of a thrombus, which is a major factor in pathogenesis of vasocclusive conditions such as myocardial infarction, unstable angina, nonhemorrhagic stroke and reocclusion of coronary arteries after angioplasty or thrombolytic therapy.
15 Thrombin is also a potent inducer of smooth muscle cell proliferation and may therefore be involved in a variety of proliferative responses such as restenosis after angioplasty and graft induced atherosclerosis. In addition, thrombin is chemotactic for leukocytes and may therefore play a role in inflammation.
(Hoover, R.J., et al., *Cell*, **14**, 423 (1978); Etingin, O.R., et al., *Cell*, **61**, 657
20 (1990). These observations indicate that inhibition of thrombin formation or inhibition of thrombin itself may be effective in preventing or treating thrombosis, limiting restenosis and controlling inflammation.

Direct or indirect inhibition of thrombin activity has been the focus of a variety of recent anticoagulant strategies as reviewed by Claeson, G., "Synthetic Peptides and
25 Peptidomimetics as Substrates and Inhibitors of Thrombin and Other Proteases in the Blood Coagulation System", *Blood Coag. Fibrinol.* **5**, 411-436 (1994). Several classes of anticoagulants currently used in the clinic directly or indirectly affect thrombin (i.e. heparins, low-molecular weight heparins, heparin-like compounds and coumarins).

The formation of thrombin is the result of the proteolytic cleavage of its
30 precursor prothrombin at the Arg-Thr linkage at positions 271-272 and the Arg-Ile linkage at positions 320-321. This activation is catalyzed by the prothrombinase complex, which is assembled on the membrane surfaces of platelets, monocytes, and endothelial cells. The complex consists of Factor Xa (a serine protease), Factor Va (a cofactor), calcium ions and the acidic phospholipid surface. Factor Xa is the activated form of its precursor, Factor X, which is secreted by the liver as a 58 kd precursor and is converted to the active form, Factor Xa, in both the extrinsic and intrinsic blood coagulation pathways. Factor X is a member of the calcium ion binding, gamma

carboxyglutamyl (Gla)-containing, vitamin K dependent, blood coagulation glycoprotein family, which also includes Factors VII and IX, prothrombin, protein C and protein S (Furie, B., et al., *Cell*, **53**, 505 (1988)). The activity of Factor Xa in effecting the conversion of prothrombin to thrombin is dependent on its inclusion in the 5 prothrombinase complex.

The prothrombinase complex converts the zymogen prothrombin into the active procoagulant thrombin. It is therefore understood that Factor Xa catalyzes the next-to-last step in the blood coagulation cascade, namely the formation of the serine protease thrombin. In turn, thrombin then acts to cleave soluble fibrinogen in the plasma to form 10 insoluble fibrin.

The location of the prothrombinase complex at the convergence of the intrinsic and extrinsic coagulation pathways, and the resulting significant amplification of thrombin generation (several hundred-thousand fold faster in effecting the conversion of prothrombin to thrombin than Factor Xa in soluble form) mediated by the complex at 15 a limited number of targeted catalytic units present at vascular lesion sites, suggests that inhibition of thrombin generation is a desirable method to block uncontrolled procoagulant activity. It has been suggested that compounds which selectively inhibit factor Xa may be useful as *in vitro* diagnostic agents, or for therapeutic administration in certain thrombotic disorders, see e.g., WO 94/13693. Unlike thrombin, which acts 20 on a variety of protein substrates as well as at a specific receptor, factor Xa appears to have a single physiologic substrate, namely prothrombin.

Plasma contains an endogenous inhibitor of both the factor VIIa-tissue factor (TF) complex and factor Xa called tissue factor pathway inhibitor (TFPI). TFPI is a Kunitz-type protease inhibitor with three tandem Kunitz domains. TFPI inhibits the 25 TF/FVIIa complex in a two-step mechanism which includes the initial interaction of the second Kunitz domain of TFPI with the active site of factor Xa, thereby inhibiting the proteolytic activity of factor Xa. The second step involves the inhibition of the TF/FVIIa complex by formation of a quaternary complex TF/FVIIa/TFPI/fXa as described by Girard, T.J. et al., "Functional Significance of the Kunitz-type Inhibitory 30 Domains of Lipoprotein-associated Coagulation Inhibitor", *Nature*, **338**, 518-520 (1989).

Polypeptides derived from hematophagous organisms have been reported which are highly potent and specific inhibitors of factor Xa, e.g., United States Patent 4,588,587. Also, Factor Xa inhibitory compounds which are not large polypeptide-type 35 inhibitors have also been reported, e.g., Tidwell, R.R. et al., "Strategies for Anticoagulation With Synthetic Protease Inhibitors. Xa Inhibitors Versus Thrombin Inhibitors", *Thromb. Res.*, **19**, 339-349 (1980)

Accordingly, there exists a need in the art for effective therapeutic agents for the regulation of hemostasis. There also exists a need in the art for effective therapeutic agents for the prevention and treatment of thrombus formation and other pathological processes in the vasculature induced by thrombin such as, for example, restenosis and inflammation. Particularly needed are small molecule antagonists or inhibitors of Factor X or of its activated form Factor Xa. The invention as described below answers this need.

Summary of the Invention

- 10 The invention relates to alkenyl and alkynyl compounds capable of assisting in maintaining the integrity of mammalian circulation after injury, inflammation, disease, congenital defect, dysfunction or other disruption. In particular, the invention provides alkenyl and alkynyl compounds, including their pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives, having certain biological properties
15 and useful as potent and specific inhibitors of blood coagulation. The alkenyl and alkynyl compounds of the invention are potent and highly selective inhibitors of isolated factor Xa when assembled in the prothrombinase complex. The compounds of the invention exhibit selectivity for factor Xa over other proteases of the coagulation cascade (e.g., thrombin) or the fibrinolytic cascade.
- 20 The invention also provides pharmaceutical compositions comprising an alkenyl or alkynyl compound of the invention and a pharmaceutically acceptable carrier. The compounds of the invention are useful as diagnostic reagents as well as antithrombotic agents. Accordingly, the invention further provides a method of using the compounds of the invention in the diagnosis, treatment and/or prevention of a
25 condition in a mammal characterized by undesired coagulation disorders (e.g., thrombotically mediated acute coronary or cerebrovascular syndrome, thrombotic syndrome occurring in the venous system, coagulopathy, and any thrombotic complications associated with extracorporeal circulation or instrumentation).
The invention still further relates to a method of using the compounds of the
30 invention for the inhibition of coagulation in biological samples.

Definitions

In accordance with the invention and as used herein, the following terms are defined with the following meanings, unless explicitly stated otherwise.

- The term "alkenyl" as used herein refers to a trivalent straight chain or branched
5 chain unsaturated aliphatic radical radical that includes at least two carbons joined by a double bond. The term "alkinyl" (or "alkynyl") as used herein refers to a straight or branched chain aliphatic radical that includes at least two carbons joined by a triple bond. If no number of carbons is specified, "alkenyl" and "alkinyl" each refer to radicals having from 2-12 carbon atoms.
- 10 The term "alkyl" as used herein refers to saturated aliphatic groups including straight-chain (*i.e.* linear) and branched-chain groups having the number of carbon atoms specified, or if no number is specified, having up to 12 carbon atoms. The term "cycloalkyl" as used herein refers to a mono-, bi-, or tricyclic aliphatic ring system having 3 to 14 carbon atoms, preferably, 3 to 7 carbon atoms.
- 15 As used herein, the terms "carbocyclic ring structure" and "C₃₋₁₆ carbocyclic mono, bicyclic or tricyclic ring structure" or the like are each intended to mean stable ring structures having only carbon atoms as ring atoms wherein the ring structure is a substituted or unsubstituted member selected from the group consisting of a stable monocyclic ring which is aromatic ring ("aryl") having six ring atoms; a stable
20 monocyclic non-aromatic ring having from 3 to 7 ring atoms in the ring; a stable bicyclic ring structure having a total of from 7 to 12 ring atoms in the two rings wherein the bicyclic ring structure is selected from the group consisting of ring structures in which both of the rings are aromatic, ring structures in which one of the rings is aromatic and ring structures in which both of the rings are non-aromatic; and a stable
25 tricyclic ring structure having a total of from 10 to 16 atoms in the three rings wherein the tricyclic ring structure is selected from the group consisting of ring structures in which three of the rings are aromatic, ring structures in which two of the rings are aromatic and ring structures in which three of the rings are non-aromatic. In each case, the non-aromatic rings when present in the monocyclic, bicyclic or tricyclic ring
30 structure may independently be saturated, partially saturated or fully saturated. Examples of such carbocyclic ring structures include, but are not limited to, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, adamantyl, cyclooctyl, [3.3.0]bicyclooctane, [4.3.0]bicyclonanone, [4.4.0]bicyclodecane (decalin), 2.2.2]bicyclooctane, fluorenyl, phenyl, naphthyl, indanyl, adamantyl, or
35 tetrahydronaphthyl (tetralin). Moreover, the ring structures described herein may be

attached to one or more indicated pendant groups via any carbon atom which results in a stable structure. The term "substituted" as used in conjunction with carbocyclic ring structures means that hydrogen atoms attached to the ring carbon atoms of ring structures described herein may be substituted by one or more of the groups indicated 5 for that structure if such substitution(s) would result in a stable compound.

- The term "arylalkyl" which is included with the term "carbocyclic aryl" as used herein refers to one, two, or three aryl groups having the number of carbon atoms designated, appended to an alkyl group having the number of carbon atoms designated. Suitable arylalkyl groups include, but are not limited to, benzyl, picolyl, 10 naphthylmethyl, phenethyl, benzhydryl, trityl, and the like, all of which may be optionally substituted.

As used herein, the term "heterocyclic ring" or "heterocyclic ring system" is intended to mean a substituted or unsubstituted member selected from the group consisting of stable monocyclic ring having from 5-7 members in the ring itself and 15 having from 1-4 heteroatoms in the ring selected from N, O and S; a stable bicyclic ring structure having a total of from 7 to 12 atoms in the two rings wherein at least one of the two rings has from 1-4 heteroatoms selected from N, O and S, including bicyclic ring structures wherein any of the described stable monocyclic heterocyclic rings is fused to a hexane or benzene ring; and a stable tricyclic heterocyclic ring structure 20 having a total of from 10 to 16 atoms in the three rings wherein at least one of the three rings has from 1-4 heteroatoms selected from N, O and S. Any nitrogen and sulfur atoms present in a heterocyclic ring of such a heterocyclic ring structure may be oxidized. Unless indicated otherwise the terms "heterocyclic ring" or "heterocyclic ring system" include aromatic rings, as well as non-aromatic rings which can be saturated, 25 partially saturated or fully saturated non-aromatic rings. Also, unless indicated otherwise the term "heterocyclic ring system" includes ring structures wherein all of the rings contain at least one hetero atom as well as structures having less than all of the rings in the ring structure containing at least one hetero atom, for example bicyclic ring structures wherein one ring is a benzene ring and one of the rings has one or more 30 hetero atoms are included within the term "heterocyclic ring systems" as well as bicyclic ring structures wherein each of the two rings has at least one hetero atom. Moreover, the ring structures described herein may be attached to one or more indicated pendant groups via any hetero atom or carbon atom which results in a stable structure. Further, the term "substituted" means that one or more of the hydrogen atoms on the 35 ring carbon atom(s) or nitrogen atom(s) of the each of the rings in the ring structures

described herein may be replaced by one or more of the indicated groups if such replacement(s) would result in a stable compound. Nitrogen atoms in a ring structure may be quaternized, but such compounds are specifically indicated or are included within the term "a pharmaceutically acceptable salt" for a particular compound. When 5 the total number of O and S atoms in a single heterocyclic ring is greater than 1, it is preferred that such atoms not be adjacent to one another. Preferably, there are no more than 1 O or S ring atoms in the same ring of a given heterocyclic ring structure.

Examples of monocyclic and bicyclic heterocyclic ring systems, in alphabetical order, are acridinyl, azocinyl, benzimidazolyl, benzofuranyl, benzothiofuranyl, 10 benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzisoxazolyl, benzisothiazolyl, benzimidazaliny, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indoliny, indolizinyl, indolyl, 3H-indolyl, 15 isobenzofuranyl, isochromanyl, isoindazolyl, isoindoliny, isoindolyl, isoquinolinyl (benzimidazolyl), isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, 20 phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyroazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, 25 tetrahydroquinolinyl, 6H-1,2,5-thiadazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thietyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl. Preferred heterocyclic ring structures include, but are not limited to, pyridinyl, furanyl, thietyl, pyrrolyl, pyrazolyl, 30 pyrrolidinyl, imidazolyl, indolyl, benzimidazolyl, 1H-indazolyl, oxazolinyl, or isatinoyl. Also included are fused ring and spiro compounds containing, for example, the above heterocyclic ring structures.

As used herein the term "aromatic heterocyclic ring system" refers to a monocyclic and bicyclic heterocyclic ring system containing at least one aromatic ring.

The terms "halo" or "halogen" as used herein refer to Cl, Br, F or I group. The term "haloalkyl" and the like, refer to a carbon radical having at least one hydrogen atom replaced by a Cl, Br, F or I atom. A mixture of different halo atoms may be used if more than one hydrogen atom is replaced. For example, a haloalkyl includes 5 chloromethyl (-CH₂Cl). Trihaloalkyl includes, for example, trifluoromethyl (-CF₃) and the like as preferred radicals.

The term "methylene" refers to -CH₂-.

The term "pharmaceutically acceptable salts" as used herein includes salts of 10 compounds of the invention derived from the combination of a compound of the invention and an organic or inorganic acid or base. Preferably, a pharmaceutically acceptable salt of a compound of the invention is a pharmaceutically acceptable acid addition salt or a pharmaceutically acceptable base addition salt, more preferably, a pharmaceutically acceptable base addition salt.

15 "Pharmaceutically acceptable acid addition salt" as used herein refers to salts retaining the biological effectiveness and properties of the free bases and which are not biologically or otherwise undesirable, formed with inorganic acids such as hydrochloric acid, hydrobromic acid, sulfuric acid, nitric acid, phosphoric acid and the like, and 20 organic acids such as acetic acid, propionic acid, glycolic acid, pyruvic acid, oxalic acid, maleic acid, malonic acid, succinic acid, fumaric acid, tartaric acid, citric acid, benzoic acid, cinnamic acid, mandelic acid, methanesulfonic acid, ethanesulfonic acid, p-toluenesulfonic acid, salicylic acid and the like.

"Pharmaceutically acceptable base addition salts" as used herein refers to those 25 salts derived from inorganic bases such as sodium, potassium, lithium, ammonium, calcium, magnesium, iron, zinc, copper, manganese, aluminum salts and the like. Particularly preferred are the ammonium, potassium, sodium, calcium and magnesium salts. Salts derived from pharmaceutically acceptable organic nontoxic bases include salts of primary, secondary, and tertiary amines, substituted amines including naturally 30 occurring substituted amines, cyclic amines and basic ion exchange resins, such as isopropylamine, trimethylamine, diethylamine, triethylamine, tripropylamine, ethanolamine, 2-diethylaminoethanol, trimethamine, dicyclohexylamine, lysine, arginine, histidine, caffeine, procaine, hydrabamine, choline, betaine, ethylenediamine, glucosamine, methylglucamine, theobromine, purines, piperazine, piperidine, 35 N-ethylpiperidine, polyamine resins and the like. Particularly preferred organic

nontoxic bases are isopropylamine, diethylamine, ethanolamine, trimethamine, dicyclohexylamine, choline, and caffeine.

- The term "biological property" as used herein means an *in vivo* effector or antigenic function or activity that is directly or indirectly performed by a compound of
5 the invention that are often shown by *in vitro* assays. Effector functions include receptor or ligand binding, any enzyme activity or enzyme modulatory activity, any carrier binding activity, any hormonal activity, any activity in promoting or inhibiting adhesion of cells to an extracellular matrix or cell surface molecules, or any structural role. Antigenic functions include possession of an epitope or antigenic site that is
10 capable of reacting with antibodies raised against it.

- The term "isomer" as used herein refers to a compound having the same number and kind of atoms and hence the same molecular weight as another compound, but differing in respect to the arrangement or configuration of the atoms of the compound. The term "isomer" also includes diastereoisomers, enantiomers or mixtures thereof
15 since in the compounds of the invention, carbon atoms bonded to four non-identical substituents are asymmetric. Accordingly, the syntheses described herein may employ racemates, enantiomers or diastereomers as starting materials or intermediates. Diastereomeric products resulting from such syntheses may be separated by chromatographic or crystallization methods, or by other methods known in the art.
20 Likewise, enantiomeric product mixtures may be separated using the same techniques or by other methods known in the art. Each of the asymmetric carbon atoms, when present in the compounds of the invention, may be in one of two configurations (R or S) and both are within the scope of the invention.

25 **Detailed Description of the Invention**

The invention provides compounds of formula I:



- 30 E of formula I is a C₃₋₁₀ carbocyclic ring structure or a three to ten membered heterocyclic monocyclic or bicyclic ring structure system containing 1-4 heteroatoms selected from N, O and S. E may be further substituted with 0 to 4 R groups independently selected from the group consisting of:

- (i) H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR'R" and

(ii) a substituent member selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkynyl group and a C₃₋₁₂cycloalkyl group which may have linear or branched 5 chained portions, where for each substituent member:

(a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member may be replaced with =O or =N(R'");

(b) one or more hydrogens, independently, on the alkyl, alkenyl, alkinyl or cycloalkyl substituent member or on the -NH- chain bridging groups may be replaced 10 by R'^v; or

(c) one or more hydrogens, independently, on carbon atom(s) of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member, on the -NH- chain bridging group or of R', R" or R'^v may form an intracyclic bond to form a C₃₋₁₂carboyclic ring structure or a three to seven membered heterocyclic ring containing 1-4 heteroatoms 15 selected, independently, from N, O and S. According to the invention, substituent member (ii) may further contain from 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)-, and -S(=O)₂.

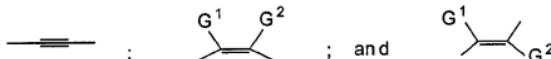
R', R", R'^v and R'^w are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, 20 -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₃)₁₋₅, -(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, 25 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂ 30 C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring 35 structure containing 1-4 heteroatoms selected from N, O, and S.

R^a and R^b are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR'R", -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH,

- $-C_{0-6}alkenyl-NR'R''$, $-C_{0-6}alkinyl-SH$, $-C_{0-6}alkinyl-OH$, $-C_{0-6}alkinyl-CHO$,
 $-C_{0-6}alkinyl-COOH$, $-C_{0-6}alkinyl-NR'R''$, $-C_{1-6}alkyl$, $-(CH_2)_{1-6}Cl$, $-(CH_2)_{1-6}F$,
 $-(CH_2)_{1-6}Br$, $-(CH_2)_{1-6}I$, $-(CF_3)_{1-5}(CF_3)$, $-(CH_2)_{1-6}CN$, $-(CH_2)_{0-6}NO_2$,
 $-C_{1-6}alkyl$, $-(CH_2)_{0-4}CH=(CH)_0-(CH_2)_{0-4}(CH_3)_0$, $C_{0-5}alkyl-O-C_{1-6}alkyl$, $-C_{0-5}alkyl-O-C_{2-6}alkenyl$,
5 $-C_{2-6}alkinyl-O-C_{1-6}alkyl$, $-C_{6-10}aryl$, $-C_{0-6}alkyl-O-C_{6-10}aryl$, $-C_{0-6}alkyl-S(=O)_{0-2}C_{1-6}alkyl$,
 $-C_{0-6}alkyl-S(=O)_{0-2}C_{2-6}alkenyl$, $-C_{2-6}alkenyl-S(=O)_{0-2}C_{1-6}alkyl$, $-C_{0-6}alkyl-S(=O)_{0-2}C_{1-6}alkinyl$,
 $-C_{1-6}alkinyl$, $-C_{2-6}alkinyl-S(=O)_{0-2}C_{1-6}alkyl$, $-C_{0-6}alkyl-S(=O)_{0-2}C_{6-10}aryl$,
10 $-C_{0-6}alkyl|C_{6-10}aryl$, $-C_{2-6}alkenyl|C_{6-10}aryl$, $-C_{2-6}alkinyl|C_{6-10}aryl$, $-C_{0-6}alkyl-COO-C_{1-6}alkyl$,
 $-C_{0-6}alkinyl-COO-C_{2-6}alkenyl$, $-C_{0-6}alkyl-COO-C_{2-6}alkinyl$, $-C_{2-6}alkenyl-COO-C_{1-6}alkyl$,
 $-C_{2-6}alkinyl-COO-C_{1-6}alkyl$, $-C_{2-6}alkenyl-COO-C_{1-6}alkyl$, $-C_{2-6}alkinyl-COO-C_{1-6}alkyl$,
and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from N, O, and S. The alkyl, alkenyl, and alkinyl
portions of R^a and R^b may be linear or branched and may be substituted with from 0-6
15 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂,
-CF₃, -CHO, -NH₂ and -COOH. R^a and R^b may also be taken together or with a carbon
atom having a free hydrogen to form an intracyclic bond resulting in a three to ten
membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S. R'
and R'' are each as defined above.

20

Q of formula I is selected from the group consisting of:



G¹ and G² are each independently a member selected from the group consisting of H, $-(CH_2)_rR^1-(J')_{0-1}$, $-CH=CH-R^1-(J')_{0-1}$,

- 25 $-\text{C}\equiv\text{C}-R^1-(J')_{0-1}$,
- $-(CH_2)_rX-(CH_2)_tR^1-(J')_{0-1}$, and $-X-(CH_2)_tR^1-(J')_{0-1}$;
- J¹ may be a hydrogen atom or a substituent that replaces a hydrogen atom on the R¹ group as set forth below and the J¹ group is absent when a replaceable hydrogen atom is absent from the R¹ substituent;
- 30 X is selected from the group consisting of $-N(R^2)^t$, $-P(=O)(-OR^3)(-O-)$, $-O-$, $-C(=O)-$, $-S-$, $-SO-$, and $-SO_2-$;
 r and t are each independently an integer from 0-12, preferably from 0-6;

R¹ is a member independently selected from the group consisting of:

- (i) a C₃₋₁₆ carbocyclic ring structure which may be substituted by up to 4 R groups where R is defined as above, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S which may be substituted by up to 4 R groups where R is defined as above;
 - (ii) H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR¹R^{1iv}, and
 - (iii) a substituent member selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched chained portions, where for each substituent member:
 - (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member may be replaced with a member selected from the group consisting of =O and =N(R¹ⁱⁱⁱ);
 - (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl substituents members or on the -NH- chain bridging groups may be independently replaced by an R^{1iv} substituent; and
 - (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on the -NH- chain bridging group or on the R¹ⁱ, R¹ⁱⁱ, R¹ⁱⁱⁱ or R^{1iv} substituents may form an intracyclic bond to result in a C₃₋₁₂carbocyclic ring structure or result in a three to seven membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S; and where each substituent member (iii) may contain from 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-;
- R¹ⁱ, R¹ⁱⁱ, R¹ⁱⁱⁱ and R^{1iv} are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₀₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R¹ⁱⁱ)(R^{1iv})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R¹ⁱⁱ)(R^{1iv})₀₋₁-C₀₋₁₂alkyl,
- C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
- C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R¹ⁱⁱ)(R^{1iv})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
- C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-

C_{1-12} alkyl, $-C_{2-12}$ alkinyl-COO- C_{1-12} alkyl, $-C_{6-10}$ aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing at least 1-4 heteroatoms selected from N, O, and S;

- R^{1a} and R^{1b} are each independently selected from the group consisting of H,
- 5 -CN, $-C_{0-6}$ alkyl-SH, $-C_{0-6}$ alkyl-OH, $-C_{0-6}$ alkyl-CHO, $-C_{0-6}$ alkyl-COOH,
 $-C_{0-6}$ alkyl-NR^{1a}, $-C_{0-6}$ alkenyl-SH, $-C_{0-6}$ alkenyl-OH, $-C_{0-6}$ alkenyl-CHO,
 $-C_{0-6}$ alkenyl-COOH, $-C_{0-6}$ alkenyl-NR^{1a}, $-C_{0-6}$ alkinyl-SH, $-C_{0-6}$ alkinyl-OH,
 $-C_{0-6}$ alkinyl-CHO, $-C_{0-6}$ alkinyl-COOH, $-C_{0-6}$ alkinyl-NR^{1a}, $-C_{1-6}$ alkyl, $-(CH_2)_{0-6}Cl$,
 $-(CH_2)_{0-6}F$, $-(CH_2)_{0-6}Br$, $-(CH_2)_{0-6}I$, $-(CF_2)_{1-3}(CF_3)$, $-(CH_2)_{0-6}(CF_3)$, $-(CH_2)_{0-6}CN$,
- 10 $-(CH_2)_{0-6}NO_2$, $-C_{1-6}$ alkyl, $(CH_2)_{0-4}CH=(CH)_{0-1}(CH_2)_{0-4}(CH_3)_{0-1}$, $-C_{0-6}$ alkyl-O-C₁₋₆alkyl,
 $-C_{0-6}$ alkyl-O-C₂₋₆alkenyl, $-C_{2-6}$ alkenyl-O-C₁₋₆alkyl, $-C_{2-6}$ alkinyl, $-C_{0-6}$ alkyl-O-C₂₋₆alkinyl,
 $-C_{2-6}$ alkinyl-O-C₁₋₆alkyl, $-C_{6-10}aryl$, $-C_{0-6}$ alkyl-O-C<sub>6-10aryl, $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl,
 $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{2-6}$ alkenyl, $-C_{2-6}$ alkenyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂
 $-C_{1-6}$ alkinyl, $-C_{2-6}$ alkinyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{6-10}aryl$,</sub>
- 15 $-C_{0-6}$ alkyl-C₆₋₁₀aryl, $-C_{2-6}$ alkenyl-C₆₋₁₀aryl, $-C_{2-6}$ alkinyl-C₆₋₁₀aryl, $-C_{0-6}$ alkyl-COO-C₁₋₆alkyl,
 $-C_{0-6}$ alkyl-COO-C₂₋₆alkenyl, $-C_{0-6}$ alkyl-COO-C₂₋₆alkinyl, $-C_{2-6}$ alkenyl-COO-C₁₋₆alkyl,
 $-C_{2-6}$ alkinyl-COO-C₁₋₆alkyl, $-C_{2-6}$ alkenyl-COO-C₁₋₆alkyl, $-C_{2-6}$ alkinyl-COO-C₁₋₆alkyl,
and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from N, O, and S, where the alkyl, alkenyl, and
20 alkinyl portions of R^{1a} and R^{1b} may be linear or branched and may be substituted with
from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH,
-NO₂, -CF₃, -CHO, -NH₂, and -COOH, where R^{1a} and R^{1b} are each as described above.
R^{1a} and R^{1b} may be taken together or with a carbon atom having a free hydrogen to form
an intracyclic bond resulting in a three to ten membered heterocyclic ring having from
25 1-4 heteroatoms selected from N, O, and S;
- R² is selected from the group consisting of H, -CN, $-C_{0-6}$ alkyl-SH,
 $-C_{0-6}$ alkyl-OH, $-C_{0-6}$ alkyl-CHO, $-C_{0-6}$ alkyl-COOH, $-C_{0-6}$ alkyl-NR^{2a}R^{2b}, $-C_{0-6}$ alkenyl-SH,
 $-C_{0-6}$ alkenyl-OH, $-C_{0-6}$ alkenyl-CHO, $-C_{0-6}$ alkenyl-COOH, $-C_{0-6}$ alkenyl-NR^{2a}R^{2b},
 $-C_{0-6}$ alkinyl-SH, $-C_{0-6}$ alkinyl-OH, $-C_{0-6}$ alkinyl-CHO, $-C_{0-6}$ alkinyl-COOH,
- 30 $-C_{0-6}$ alkinyl-NR^{2a}R^{2b}, $-C_{1-6}$ alkyl, $(CH_2)_{0-6}Cl$, $-(CH_2)_{0-6}F$, $-(CH_2)_{0-6}Br$, $-(CH_2)_{0-6}I$,
 $-(CF_2)_{1-3}(CF_3)$, $-(CH_2)_{0-6}(CF_3)$, $-(CH_2)_{0-6}CN$, $-(CH_2)_{0-6}NO_2$, $-C_{1-6}$ alkyl,
 $-(CH_2)_{0-4}CH=(CH)_{0-1}(CH_2)_{0-4}(CH_3)_{0-1}$, $-C_{0-6}$ alkyl-O-C₁₋₆alkyl, $-C_{0-6}$ alkyl-O-C₂₋₆alkenyl,
 $-C_{2-6}$ alkenyl-O-C₁₋₆alkyl, $-C_{2-6}$ alkinyl, $-C_{0-6}$ alkyl-O-C₂₋₆alkinyl, $-C_{2-6}$ alkinyl-O-C₁₋₆alkyl-,
 $-C_{6-10}aryl$, $-C_{0-6}$ alkyl-O-C₆₋₁₀aryl, $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂
- 35 $-C_{2-6}$ alkenyl, $-C_{2-6}$ alkenyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{1-6}$ alkinyl,
 $-C_{2-6}$ alkinyl-S(=O)₀₋₂ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂ $-C_{6-10}aryl$, $-C_{0-6}$ alkyl-C₆₋₁₀aryl,
 $-C_{2-6}$ alkenyl-C₆₋₁₀aryl, $-C_{2-6}$ alkinyl-C₆₋₁₀aryl, $-C_{0-6}$ alkyl-COO-C₁₋₆alkyl,

-C₆-alkyl-COO-C₂₋₆alkenyl, -C₆-alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S, where the alkyl, alkenyl, and alkinyl portions of R² may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R² may be taken together with a carbon atom having a free hydrogen may form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O, and S;

R² and R^{2a} are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{2a})(R^{2b}), -C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{2a})(R^{2b}), -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^{2a})(R^{2b}), -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆aryl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^{2a} and R^{2b} are each independently selected from the group consisting of H, -CN, -C₆₋₆alkyl-SH, -C₆₋₆alkyl-OH, -C₆₋₆alkyl-CHO, -C₆₋₆alkyl-COOH, -C₆₋₆alkyl-NR²R^{2a}, -C₆₋₆alkenyl-SH, -C₆₋₆alkenyl-OH, -C₆₋₆alkenyl-CHO, -C₆₋₆alkenyl-COOH, -C₆₋₆alkenyl-NR²R^{2a}, -C₆₋₆alkinyl-SH, -C₆₋₆alkinyl-OH, -C₆₋₆alkinyl-CHO, -C₆₋₆alkinyl-COOH, -C₆₋₆alkinyl-NR²R^{2a}, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₆₋₆alkyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl, -C₆₋₆alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₄alkyl-S(=O)₀₋₂C₁₋₅alkyl, -C₆₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₄alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₄alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₆₋₆alkylC₆₋₁₀aryl, -C₆₋₆alkenylC₆₋₁₀aryl, -C₆₋₆alkinylC₆₋₁₀aryl, -C₆₋₆alkyl-COO-C₆₋₁₀aryl.

- C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of R^{2a} and R^{2b} may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, where R²ⁱ and R²ⁱⁱ are each as described above. R^{2a} and R^{2b} may be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring
- 5 having from 1-4 heteroatoms selected from N, O and S;
- R³ is selected from the group consisting of:
- (i) H, -CHO, -COOH; and
 - (ii) a substituent member selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched 10 chained portions, where for each substituent member:
 - (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member may be replaced with a member selected from the group consisting of =O and =N(R^{3j});
- 15 (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl substituents members or on the -NH- chain bridging groups may be independently replaced by an R³ⁱⁱ substituent; and
- (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on the -NH- chain bridging group 20 or on the R³ⁱ or R³ⁱⁱ substituents may form an intracyclic bond to result in a C₃₋₁₂carboyclic ring structure or result in a three to seven membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S; and where each substituent member (ii) may further contain 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-;
- 25 R³ⁱ and R³ⁱⁱ are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₃)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH) 0-1(CH₂)₀₋₁₂(CH₃)₀₋₁₁, -O-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, 30 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₀₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₁₂

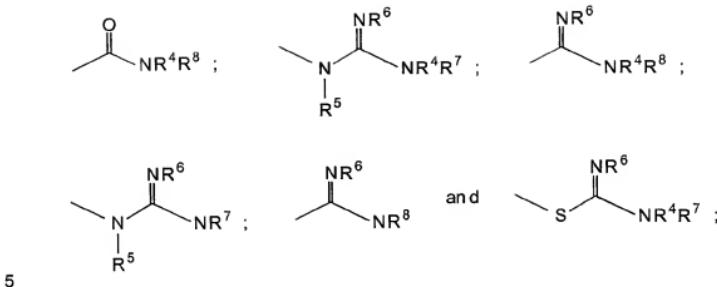
$\text{C}_{-1,12}\text{alkyl}$, $\text{C}_{-0,12}\text{alkyl-S(=O)}_{0,2}\text{C}_{-2,12}\text{alkenyl}$, $\text{C}_{-2,12}\text{alkenyl-S(=O)}_{0,2}\text{C}_{-1,12}\text{alkyl}$, $\text{C}_{-0,2}\text{alkyl-S(=O)}_{0,2}\text{C}_{-1,6}\text{alkinyl}$, $\text{C}_{-0,12}\text{alkinyl-S(=O)}_{0,2}\text{C}_{-0,2}\text{alkyl}$, $\text{C}_{-0,12}\text{alkyl-S(=O)}_{0,2}\text{C}_{-6,10}\text{aryl}$, $\text{C}_{-0,12}\text{alkyl-C}_{6,10}\text{aryl}$, $\text{C}_{-2,12}\text{alkenyl-C}_{6,10}\text{aryl}$, $\text{C}_{-2,12}\text{alkinyl-C}_{6,10}\text{aryl}$, -COOH , $\text{-C}_{-0,12}\text{alkyl-COO-C}_{-1,12}\text{alkyl}$, $\text{C}_{-0,12}\text{alkyl-COO-C}_{-2,12}\text{alkenyl}$, $\text{-C}_{-0,12}\text{alkyl-COO-C}_{-2,12}\text{alkinyl}$,

- 5 -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^{3a} and R^{3b} are each independently selected from the group consisting of H,

- 10 -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,
 -C₀₋₆alkyl-NR^{3a}R^{3b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,
 -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{3a}R^{3b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
 -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{3a}R^{3b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl,
 -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₅(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN,
 15 -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)(CH₂)₀₋₁(CH₂)₀₋₁(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
 -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,
 -C₀₋₆alkyl-S(=O)₀₋₂-C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
 20 -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl,
 -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₂₋₆alkinyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
 -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
 -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl,
 and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
 containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and
 25 alkynyl portions of R^{3a} and R^{3b} may be linear or branched and may be substituted with
 from 0-6 members independently selected from the group consisting of -I, -F, -Br,
 -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^{3a} and R^{3b} may be taken together or with
 a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to
 ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S;
 30 R^{3a} and R^{3b} are each a member independently selected from the group
 consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F,
 -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂-CN,
 -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₆alkyl, -C₀₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl,
 -(CH₂)₀₋₁₂-CH=(CH)₀₋₁(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl,
 35 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋
 alkyl-O-C₁₋₆aryl, -S(=O)₀₋₂-C₁₋₆alkyl-N(R^{3a})(R^{3b})₀₋₁, -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂

- $_2\text{-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{0\text{-}12}\text{alkyl-S(=O)}_{0\text{-}2}\text{-C}_{2\text{-}12}\text{alkenyl}$, $\text{-C}_{2\text{-}12}\text{alkenyl-S(=O)}_{0\text{-}2}\text{-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{0\text{-}12}\text{alkyl-S(=O)}_{0\text{-}2}\text{-C}_{1\text{-}6}\text{alkinyl}$, $\text{-C}_{0\text{-}12}\text{alkinyl-S(=O)}_{0\text{-}2}\text{-C}_{0\text{-}12}\text{alkyl}$, $\text{-C}_{0\text{-}12}\text{alkyl-S(=O)}_{0\text{-}2}\text{-C}_{6\text{-}10}\text{aryl}$, $\text{-C}_{0\text{-}12}\text{alkyl-C}_{6\text{-}10}\text{aryl}$, $\text{-C}_{2\text{-}12}\text{alkenylC}_{6\text{-}10}\text{aryl}$, $\text{-C}_{2\text{-}12}\text{alkinylC}_{6\text{-}10}\text{aryl}$, -COO , $\text{-C}_{0\text{-}12}\text{alkyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{0\text{-}12}\text{alkyl-COO-C}_{2\text{-}12}\text{alkenyl}$, $\text{-C}_{0\text{-}12}\text{alkyl-COO-C}_{2\text{-}12}\text{alkinyl}$,
- 5 $\text{-C}_{2\text{-}12}\text{alkenyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{2\text{-}12}\text{alkinyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{2\text{-}12}\text{alkenyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{2\text{-}12}\text{alkinyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{2\text{-}12}\text{alkinyl-COO-C}_{1\text{-}12}\text{alkyl}$, $\text{-C}_{6\text{-}10}\text{aryl}$ monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^{3a} and R^{3b} are each as described above.
- 10 Alternatively, when at least one of G¹ and G² of Q of formula I is selected from the group consisting of $-(\text{CH}_2)_r\text{R}^1\text{-J}'_{0,1}$ and $-\text{CH=CH-R}^1\text{-J}'_{0,1}$ then G¹ and G² may be taken together to form a non-aryl carbocyclic ring which may be substituted by R¹ or both R¹ and J¹, whereupon two or more R¹ and J¹ groups taken together with the atom to which they are each attached may form a further ring with the non-aryl carbocyclic
- 15 structure including a spiro ring structure, where r, R¹, and J¹ are each as described above.
- G¹ of Q of formula I may be taken together with E to form a monocyclic or bicyclic ring structure having from 3 to 10 atoms in the ring structure wherein such ring structures may be independently substituted by up to 4 R¹ substituents or collectively
- 20 25 by up to 4 R¹ and J¹ substituents, each as described above. G² of Q of formula I may be taken together with either or both of Z and A, each as described below, to independently form a monocyclic or bicyclic ring structure having from 3 to 10 atoms in the ring structure wherein such ring structures may be independently substituted by up to 4 R¹ substituents or collectively by up to 4 R¹ and J¹ substituents, each as described above.
- J¹, when present, is a member independently selected from the group consisting of: H, -CN, -NR⁹R¹⁰,

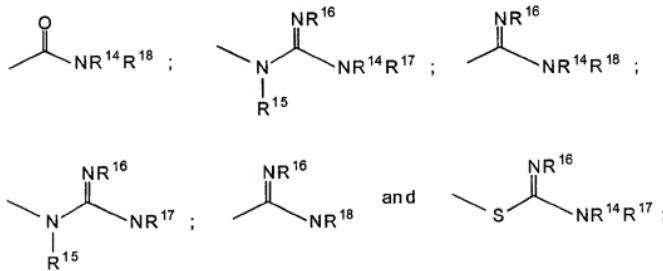


where R⁴, R⁵, R⁶, R⁹ and R¹⁰ are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₃)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH) ₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^a and R^b are each independently selected from the group consisting of H,
 -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^c,
 -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH,
 -C₀₋₆alkenyl-NR^c, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO,

- $-C_{0.6}alkinyl-COOH$, $-C_{0.6}alkinyl-NR^aR^d$, $-C_{1.6}alkyl$, $-(CH_2)_{1.6}Cl$, $-(CH_2)_{1.6}F$,
 $-(CH_2)_{1.6}Br$, $-(CH_2)_{1.6}I$, $-(CF_2)_{1.5}(CF_3)$, $-(CH_2)_{1.6}(CF_3)$, $-(CH_2)_{1.6}CN$, $-(CH_2)_{0.6}NO_2$,
 $-C_{1.6}alkyl$, $-(CH_2)_{0.4}CH=(CH)_{0.1}(CH_2)_{0.4}(CH_3)_{0.1}$, $-C_{0.5}alkyl-O-C_{1.6}alkyl$, $-C_{0.6}alkyl-O-C_{2.6}alkenyl$,
 $_alkynyl-O-C_{2.6}alkenyl$, $-C_{2.6}alkenyl-O-C_{1.6}alkyl$, $-C_{2.6}alkinyl$, $-C_{0.6}alkyl-O-C_{2.6}alkinyl$,
5 $-C_{2.6}alkinyl-O-C_{1.6}alkyl$, $-C_{0.6}aryl$, $-C_{0.6}alkyl-O-C_{0.10}aryl$, $-C_{0.6}alkyl-S(O)_{0.2}C_{1.6}alkyl$,
 $-C_{0.6}alkyl-S(O)_{0.2}C_{2.6}alkenyl$, $-C_{2.6}alkenyl-S(O)_{0.2}C_{1.6}alkyl$, $-C_{0.6}alkyl-S(O)_{0.2}C_{0.6}aryl$,
 $_2C_{1.6}alkinyl$, $-C_{2.6}alkinyl-S(O)_{0.2}C_{1.6}alkyl$, $-C_{0.6}alkyl-S(O)_{0.2}C_{0.10}aryl$,
 $-C_{0.6}alkylIC_{6.10}aryl$, $-C_{2.6}alkenylIC_{6.10}aryl$, $-C_{2.6}alkinylC_{6.10}aryl$, $-C_{0.6}alkyl-COO-C_{1.6}alkyl$,
 $-C_{0.6}alkyl-COO-C_{2.6}alkenyl$, $-C_{0.6}alkyl-COO-C_{2.6}alkinyl$, $-C_{2.6}alkenyl-COO-C_{1.6}alkyl$,
10 $-C_{2.6}alkinyl-COO-C_{1.6}alkyl$, $-C_{2.6}alkenyl-COO-C_{1.6}alkyl$, $-C_{2.6}alkinyl-COO-C_{1.6}alkyl$,
and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and
alkinyl portions of R^a and R^b may be linear or branched and may be substituted with
from 0-6 members independently selected from the group consisting of -I, -F, -Br,
15 -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^a and R^b may be taken together or with a
carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to
ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S;
R^a and R^d are independently selected from the group consisting of H,
C_{1.4}alkyl-CHO, C_{0.6}alkyl-COOH, C_{0.6}alkyl-COCl, C_{0.6}alkyl-COI, C_{0.6}alkyl-COF,
20 C_{0.6}alkyl-COB_r, C_{0.6}alkyl-COO-C_{1.6}alkyl, C_{1.6}alkyl-COO-C_{2.6}alkenyl, C_{1.6}alkyl-COO-
C_{2.6}alkinyl, C_{0.6}alkyl-COO-C_{0.6}alkyl-CF₃, C_{1.6}alkyl-COO-C_{0.10}aryl-COOH,
C_{0.6}alkyl-CN, C_{1.6}alkyl-NO₂, C_{1.6}alkyl-Cl, C_{1.6}alkyl-Br, C_{1.6}alkyl-I, C_{1.6}alkyl-F,
C_{0.6}alkyl-CF₃, C_{1.6}alkyl-CF₂-CF₃, C_{1.6}alkyl-SH, C_{1.6}alkyl, C_{1.6}alkenyl, C_{1.6}alkynyl,
C_{1.6}alkyloxy, C_{1.6}alkenyloxy, C_{1.6}alkylthio, C_{1.6}alkenylthio, C_{3.6}cycloalkyl, C_{6.10}aryl,
25 C_{1.6}alkylC_{6.10}aryl, a three to ten membered heterocyclic monocyclic or bicyclic ring
system containing 1-4 heteroatoms selected from N, O and S; and C_{1.4}alkylheterocyclic
monocyclic or bicyclic ring system having in the ring system 3 to 10 atoms with 1-4 of
such atoms being selected from N, O and S;
alternatively, R⁹ and R¹⁰ taken together can form a five to ten membered
30 heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected
from N, O and S;
R⁷ and R⁸ are each independently selected from the group consisting of H,
 $-(CH_2)_{0.12}SH$, $-(CH_2)_{0.12}OH$, $-(CH_2)_{0.12}NH_2$, $-(CH_2)_{0.12}Cl$, $-(CH_2)_{0.12}F$, $-(CH_2)_{0.12}Br$,
 $-(CH_2)_{0.12}I$, $-(CF_2)_{1.5}(CF_3)$, $-(CH_2)_{0.12}(CF_3)$, $-(CH_2)_{0.12}CN$, $-(CH_2)_{0.12}NO_2$,
35 $-(CH_2)_{0.12}CHO$, $-C_{1.12}alkyl$, $-C_{0.12}alkyl-N(R^{a\prime})R^{b\prime}$, $-C_{0.12}alkyl-O-C_{1.12}alkyl$, $-(CH_2)_{0.12}CH=(CH)$
 $_{0.1}(CH_2)_{0.12}(CH_3)_{0.1}$, $-O-C_{1.12}alkyl-N(R^{a\prime\prime})R^{b\prime\prime}$, $-C_{0.12}alkyl-O-C_{1.12}alkyl$, $-C_{0.12}alkyl-O-C_{2.12}alkenyl$,
 $-C_{2.12}alkenyl-O-C_{1.12}alkyl$, $-C_{2.12}alkinyl$, $-C_{0.12}alkyl-O-C_{1.6}alkinyl$,
 19

- C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂
- ²-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
- ²-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₁₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl,
- 5 -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl,
- C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-
- C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl,
- C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a
three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure
- 10 containing 1-4 heteroatoms selected from the group N, O and S, where R^a, R^b, R^c and
R^d are each as described above;
- Alternatively, R⁵ or R⁸, independently taken with either R⁵ and R⁶, can each form a 3 to 10 membered heterocyclic monocyclic or bicyclic ring containing from 1-4 heteroatoms selected from N, O and S. Still further, R⁷ or R⁸, independently taken with either R⁵ and R⁶, can each form a 3 to 10 membered heterocyclic monocyclic or bicyclic ring containing from 1-4 heteroatoms selected from N, O and S.
- 15 D is a member independently selected from the group consisting of H, -CN,
-R¹¹, -N R¹²R¹³,



- 20 R¹¹ is a member independently selected from the group consisting of:
- (i) a C₃₋₁₂ carbocyclic ring structure which may be substituted by up to 4 R groups where R is defined as above, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms which may be substituted by up to 4 R groups where R is defined as above;

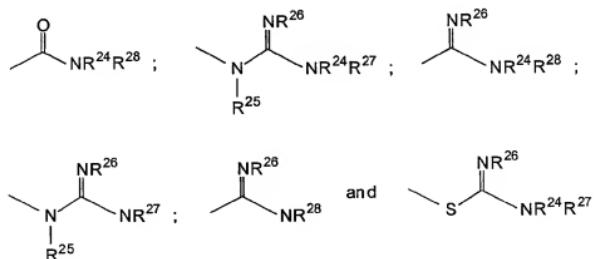
- (ii) H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR^{11a}R^{11b}; and
 (iii) a substituent member selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched
 5 chained portions, where for each substituent member the following types of hydrogen substitutions may be made:
- (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member may be replaced with a member selected from the group consisting of =O and =N(R^{11m});
 10 (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl substituents members or on the -NH- chain bridging groups may be independently replaced by an R^{11iv} substituent; and
 (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on the -NH- chain bridging group or on the R¹¹ⁱ, R^{11m}, R¹¹ⁿ or R^{11o} substituents may form an intracyclic bond to result in a C₃₋₁₂carbocyclic ring structure or result in a three to seven membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S; and where substituent member (iii) may contain from 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-;
 15 20 R¹¹ⁱ, R^{11m}, R¹¹ⁿ and R^{11o} are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F, -(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂CN, -(CH₂)₀₋₁₂NO₂, -(CH₂)₀₋₁₂CHO; -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁C₀₋₁₂alkyl, -(CH₂)₀₋₁₂CH=CH-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁C₀₋₁₂alkyl,
 25 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
 30 -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring
 35 structure containing 1 to 4 heteroatoms selected from N, O and S;
 R^{11a} and R^{11b} are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,

- C₀₋₆alkyl-NR^{11a}R^{11b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,
-C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{11a}R^{11b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
-C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{11a}R^{11b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl,
-(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN,
5 -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
-C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
-C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkyl,
-C₀₋₆alkyl-S(=O)₀₋₂-C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
^a-C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl,
10 -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₂₋₆alkinyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
-C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
-C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl,
and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and
15 alkinyl portions of R^{11a} and R^{11b} may be straight or branched chained and may be
substituted with from 0-6 members independently selected from the group consisting of
-I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^{11a} and R^{11b} may be taken
together or with a carbon atom having a free hydrogen to form an intracyclic bond
resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms
20 selected from N, O and S;
- R¹², R¹³, R¹⁴, R¹⁵, and R¹⁶ are independently selected from the group consisting
of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F,
-(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂CN,
-(CH₂)₀₋₁₂NO₂, -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl,
25 -(CH₂)₀₋₁₂CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl,
-C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
-C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂
^aalkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
^a-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂
30 _aalkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-
C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
-C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl,
-C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-
C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure,
35 and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring
structure containing 1-4 heteroatoms selected from N, O and S, where R^a, R^b, R^c and
R^d are each as described above;

R^{12} and R^{13} taken together can form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S;

- 5 R^{17} and R^{18} are each independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkenyl, -C₀₋₁₂alkenyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -S(=O)₀₋₂-C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^a, R^b, R^c and R^d are each as described above;

J is a member independently selected from the group consisting of H, -CN, -R²³, -NR²⁹R³⁰,



25

R²³ is a member independently selected from the group consisting of:

- (i) a C₃₋₁₆ carbocyclic ring structure which may be substituted by up to 4 R groups where R is defined as above, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure which may be substituted by up to 4 R groups where R is defined as above;
- 5 (ii) H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR²³R^{23w}; and
 (iii) a substituent member selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched 10 chained portions, where for each substituent member the following types of hydrogen substitutions may be made:
- (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkynyl or cycloalkyl substituent member may be replaced with a member selected from the group consisting of =O and =N(R^{23w});
- 15 (b) one or more hydrogens on the alkyl, alkenyl, alkynyl and cycloalkyl substituents members or on the -NH- chain bridging groups may be independently replaced by an R^{23w} substituent; and
 (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkynyl and cycloalkyl substituent members, on the -NH- chain bridging group or on the R²³ⁱ, R²³ⁿ, R^{23m} or R^{23w} substituents may form an intracyclic bond to result in a 20 C₃₋₁₂carbocyclic ring structure or result in a three to seven membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S; and where a substituent member (iii) may contain 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-;
- R²³ⁱ, R²³ⁿ, R^{23m} and R^{23w} are each a member independently selected from the 25 group consisting of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F, -(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₃)₁₋₅, -(CH₃)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R²³ⁱ)(R^{23b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R²³ⁿ)(R^{23b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
 30 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^{23s})(R^{23b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
 35 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-monocyclic or bicyclic ring structure,

and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms, selected from N, O and S;

- R^{23a} and R^{23b} are independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{23a}R^{23b},
- 5 -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{23a}R^{23b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{23a}R^{23b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₂(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH) ₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋
- 10 -alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl, -C₀₋₆alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkenyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
- 15 -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of R^{23a} and R^{23b} may be linear or branched and may be substituted with
- 20 from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, where R^{23a} and R^{23b} are each as defined above. R^{23a} and R^{23b} may also be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S;
- 25 R²⁴, R²⁵, R²⁶, R²⁹ and R³⁰ are independently selected from the group consisting of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F, -(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂CN, -(CH₂)₀₋₁₂NO₂, -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁C₀₋₁₂alkyl, -(CH₂)₀₋₁₂CH=(CH) ₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁C₀₋₁₂alkyl,
- 30 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl,
- 35 -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-

C_{1-12} alkyl, $-C_{2-12}$ alkinyl-COO- C_{1-12} alkyl, $-C_{6-10}$ aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^u , R^v , R^w and R^d are each as described above;

5 R^{29} and R^{30} taken together can form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S;

- 10 R^{27} and R^{28} are each independently selected from the group consisting of H, $-(CH_2)_{0-12}-SH$, $-(CH_2)_{0-12}-OH$, $-(CH_2)_{0-12}-NH_2$, $-(CH_2)_{0-12}-Cl$, $-(CH_2)_{0-12}-F$, $-(CH_2)_{0-12}-Br$, $-(CH_2)_{0-12}-I$, $-(CF_2)_{0-12}(CF_3)$, $-(CH_2)_{0-12}(CF_3)$, $-(CH_2)_{0-12}-CN$, $-(CH_2)_{0-12}-NO_2$, $-(CH_2)_{0-12}-CHO$, $-C_{1-12}$ alkyl, $-C_{6-10}$ alkyl-N(R^u)(R^{b1}) $_{0-1}$ $-C_{6-10}$ alkyl, $-(CH_2)_{0-12}-CH=(CH)_0$, $-(CH_2)_{0-12}(CH_3)_{0-1}$, $-O-C_{1-12}$ alkyl-N(R^u)(R^{b1}) $_{0-1}$ $-C_{6-10}$ alkyl, $-C_{6-12}$ alkyl-O-C $_{1-12}$ alkyl, $-C_{6-12}$ alkyl-O-C $_{2-12}$ alkenyl, $-C_{6-12}$ alkenyl-O-C $_{1-12}$ alkyl, $-C_{6-12}$ alkyl-O-C $_{1-6}$ alkinyl, $-C_{6-12}$ alkinyl-O-C $_{6-12}$ alkyl, $-C_{6-10}$ aryl, $-C_{6-12}$ alkyl-O-C $_{6-10}$ aryl, $-S(=O)_0$.
- 15 $_2-C_{1-12}$ alkyl-N(R^u)(R^{b1}) $_{0-1}$ $-C_{6-12}$ alkyl, $-C_{6-12}$ alkyl-S(=O) $_{0-2}$ $-C_{1-12}$ alkyl, $-C_{6-12}$ alkyl-S(=O) $_{0-2}$, $-C_{2-12}$ alkenyl, $-C_{2-12}$ alkenyl-S(=O) $_{0-2}$ $-C_{1-12}$ alkyl, $-C_{6-12}$ alkyl-S(=O) $_{0-2}$ $-C_{1-6}$ alkinyl, $-C_{6-12}$ alkinyl-S(=O) $_{0-2}$ $-C_{1-12}$ alkyl, $-C_{6-10}$ aryl, $-C_{6-12}$ alkyl-C $_{6-10}$ aryl, $-C_{2-12}$ alkenyl-C $_{6-10}$ aryl, $-C_{6-12}$ alkenyl-COOH, $-C_{6-12}$ alkyl-COO-C $_{1-12}$ alkyl, $-C_{6-12}$ alkyl-COO-C $_{2-12}$ alkenyl, $-C_{2-12}$ alkenyl-COO-
- 20 C_{1-12} alkyl, $-C_{2-12}$ alkinyl-COO-C $_{1-12}$ alkyl, $-C_{2-12}$ alkenyl-COO-C $_{1-12}$ alkyl, $-C_{2-12}$ alkinyl-COO-C $_{1-12}$ alkyl, $-C_{6-10}$ aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^u , R^v , R^w and R^d are each as described above;

25 A and T are each independently a ring structure which is selected from the group consisting of a C_{3-14} carbocyclic ring structure, a three to ten membered heterocyclic monocyclic or bicyclic ring structure system containing 1-4 heteroatoms selected from N, O and S, and a C_{1-4} alkylheterocyclic monocyclic or bicyclic ring system having in the ring system 3 to 10 atoms with 1-4 of such atoms being selected from N, O and S, wherein each of the above carbocyclic and heterocyclic ring structures may be substituted by 0 to 4 R groups which are defined as set forth above in the definition of E, provided that one of A and T can be absent and when both A and T are present they can be directly attached to one another by a direct bond or can be attached indirectly by a bridging group which is bonded to each of A and T. Such a bridging group is selected from the group consisting of $-C_{1-6}$ alkylene-, $-(CH_2)_{0-6}-O-(CH_2)_{0-6}-$, $-(CH_2)_{0-6}-N(R^{31})-(CH_2)_{0-6}-$, $-(CH_2)_{0-6}-C(=N(R^{31}))(CH_2)_{0-6}-$, $-(CH_2)_{0-6}-C(=O)-(CH_2)_{0-6}-$, $-(CH_2)_{0-6}-C(=O)-O-(CH_2)_{0-6}-$, $-(CH_2)_{0-6}-O-C(=O)-(CH_2)_{0-6}-$,

- $(CH_2)_{0.6}\text{-C(=O)-N(R}^{34}\text{)}\text{-}(CH_2)_{0.6}$, - $(CH_2)_{0.6}\text{-N(R}^{34}\text{)}\text{-C(=O)-(CH}_2\text{)}_{0.6}$,
 - $(CH_2)_{0.6}\text{-O-C(=O)-O-(CH}_2\text{)}_{0.6}$, - $(CH_2)_{0.6}\text{-O-C(=O)-N(R}^{34}\text{)}\text{-}(CH_2)_{0.6}$, - $(CH_2)_{0.6}\text{-N(R}^{34}\text{)}$ -
 $C(=O)\text{-O-(CH}_2\text{)}_{0.6}$, - $(CH_2)_{0.6}\text{-N(R}^{34}\text{)}\text{-C(=O)-N(R}^{35}\text{)}\text{-}(CH_2)_{0.6}$, - $(CH_2)_{0.6}\text{-S-(CH}_2\text{)}_{0.6}$,
 - $(CH_2)_{0.6}\text{-S(O)-(CH}_2\text{)}_{0.6}$, - $(CH_2)_{0.6}\text{-S(O)}_2\text{-(CH}_2\text{)}_{0.6}$, - $(CH_2)_{0.6}\text{-S(O)}_2\text{-N(R}^{34}\text{)}\text{-}(CH_2)_{0.6}$,
 - 5 - $(CH_2)_{0.6}\text{-N(R}^{34}\text{)}\text{-SO}_2\text{-(CH}_2\text{)}_{0.6}$, and - $(CH_2)_{0.6}\text{-N(R}^{34}\text{)}\text{-SO}_2\text{-N(R}^{35}\text{)}\text{-}(CH_2)_{0.6}$.
- R^{34} and R^{35} are each a member independently selected from the group consisting of H, -CN, - $C_{0.6}$ alkyl-SH, - $C_{0.6}$ alkyl-OH, - $C_{0.6}$ alkyl-CHO, - $C_{0.6}$ alkyl-COOH, - $C_{0.6}$ alkyl-NR²⁴R²⁵, - $C_{0.6}$ alkenyl-SH, - $C_{0.6}$ alkenyl-OH, - $C_{0.6}$ alkenyl-CHO, - $C_{0.6}$ alkenyl-COOH, - $C_{0.6}$ alkenyl-NR³⁴R³⁵, - $C_{0.6}$ alkinyl-SH, - $C_{0.6}$ alkinyl-OH,
- 10 - $C_{0.6}$ alkinyl-CHO, - $C_{0.6}$ alkinyl-COOH, - $C_{0.6}$ alkinyl-NR³⁴R³⁵, - $C_{1.6}$ alkyl, - $(CH_2)_{1.6}\text{-Cl}$, - $(CH_2)_{1.6}\text{-F}$, - $(CH_2)_{1.6}\text{-Br}$, - $(CH_2)_{1.6}\text{-I}$, - $(CF_2)_{1.5}\text{-}(CF_3)$, - $(CH_2)_{1.6}\text{-}(CF_3)$, - $(CH_2)_{1.6}\text{-CN}$, - $(CH_2)_{0.6}\text{-NO}_2$, - $C_{1.6}$ alkyl, - $(CH_2)_{0.4}\text{-CH=}(CH)_0\text{-}(CH}_2\text{)}_{0.1}\text{-(CH}_3\text{)}_{0.1}$, - $C_{0.5}$ alkyl-O-C_{1.6}alkyl, - $C_{0.5}$ alkyl-O-C_{2.6}alkenyl, - $C_{2.6}$ alkenyl-O-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-O-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{2.6}alkenyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl,
 - 15 - $C_{0.6}$ alkyl-S(=O)_{0.2}- $C_{2.6}$ alkenyl, - $C_{2.6}$ alkenyl-S(=O)_{0.2}- $C_{1.6}$ alkyl, - $C_{0.6}$ alkyl-S(=O)_{0.2}- $C_{1.6}$ alkinyl, - $C_{2.6}$ alkinyl-S(=O)_{0.2}- $C_{1.6}$ alkyl, - $C_{0.6}$ alkyl-S(=O)_{0.2}- $C_{6.10}$ aryl, - $C_{0.6}$ alkyl-C_{6.10}aryl, - $C_{2.6}$ alkenyl-C_{6.10}aryl, - $C_{0.6}$ alkyl-COO-C_{1.6}alkyl, - $C_{0.6}$ alkyl-COO-C_{2.6}alkenyl, - $C_{0.6}$ alkenyl-COO-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl, - $C_{2.6}$ alkenyl-COO-C_{1.6}alkyl,
 - 20 and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of each of R^{34} and R^{35} may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^{34} and R^{35} may be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S;
 - 25 R³⁴ and R³⁵ are each a member independently selected from the group consisting of H, - $(CH_2)_{0.12}$ SH, - $(CH_2)_{0.12}$ OH, - $(CH_2)_{0.12}$ NH₂, - $(CH_2)_{0.12}$ Cl, - $(CH_2)_{0.12}$ F, - $(CH_2)_{0.12}$ Br, - $(CH_2)_{0.12}$ I, - $(CF_2)_{1.5}\text{-}(CF}_3$, - $(CH_2)_{0.12}\text{-}(CF}_3$, - $(CH_2)_{0.12}\text{-CN}$, - $(CH_2)_{0.12}\text{-NO}_2$, - $(CH_2)_{0.12}\text{-CHO}$, - $C_{1.12}$ alkyl, - $C_{0.12}$ alkyl-N(R^{34a})(R^{34b})_{0.1}- $C_{0.12}$ alkyl, - $(CH_2)_{0.12}\text{-CH=}(CH)_0\text{-}(CH}_2\text{)}_{0.1}\text{-(CH}_3\text{)}_{0.1}$, - $O\text{-}C_{1.12}$ alkyl-N(R^{34a})(R^{34b})_{0.1}- $C_{0.12}$ alkyl, - $C_{0.12}$ alkyl-O-C_{1.12}alkyl, - $C_{0.12}$ alkyl-O-C_{2.12}alkenyl, - $C_{2.12}$ alkenyl-O-C_{1.12}alkyl, - $C_{2.12}$ alkenyl, - $C_{0.12}$ alkyl-O-C_{1.6}alkinyl, - $C_{0.12}$ alkinyl-O-C_{0.12}alkyl, - $C_{6.10}$ aryl, - $C_{0.12}$ alkyl-O-C_{1.6}alkyl, - $S(=O)\text{-}C_{0.2}\text{-}C_{1.6}$ alkyl-N(R^{34a})(R^{34b})_{0.1}- $C_{0.12}$ alkyl, - $C_{0.12}$ alkyl-S(=O)_{0.2}- $C_{1.6}$ alkinyl, - $C_{0.12}$ alkinyl-S(=O)_{0.2}- $C_{0.12}$ alkyl, - $C_{0.12}$ alkyl-S(=O)_{0.2}-

- C_{6-10} aryl, $-C_{0-12}$ alkyl $|C_{6-10}$ aryl, $-C_{2-12}$ alkenyl $|C_{6-10}$ aryl, $-C_{2-12}$ alkinyl $|C_{6-10}$ aryl, $-COOH$, $-C_{0-12}$ alkyl-COO- C_{1-12} alkyl, $-C_{0-12}$ alkyl-COO- C_{2-12} alkenyl, $-C_{0-12}$ alkyl-COO- C_{2-12} alkinyl, $-C_{2-12}$ alkenyl-COO- C_{1-12} alkyl, $-C_{2-12}$ alkinyl-COO- C_{1-12} alkyl, $-C_{2-12}$ alkenyl-COO- C_{1-12} alkyl, $-C_{2-12}$ alkinyl-COO- C_{1-12} alkyl, $-C_{6-10}$ aryl monocyclic or 5 bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S; R^{34a} and R^{34b} are each independently selected from the group consisting of H, $-CN$, $-C_{0-6}$ alkyl-SH, $-C_{0-6}$ alkyl-OH, $-C_{0-6}$ alkyl-CHO, $-C_{0-6}$ alkyl-COOH, $-C_{0-6}$ alkyl-NR 34a R 34b , $-C_{0-6}$ alkenyl-SH, $-C_{0-6}$ alkenyl-OH, $-C_{0-6}$ alkenyl-CHO, 10 $-C_{0-6}$ alkenyl-COOH, $-C_{0-6}$ alkenyl-NR 34a R 34b , $-C_{0-6}$ alkenyl-SH, $-C_{0-6}$ alkenyl-OH, $-C_{0-6}$ alkinyl-CHO, $-C_{0-6}$ alkinyl-COOH, $-C_{0-6}$ alkinyl-NR 34a R 34b , $-C_{1-6}$ alkyl, $-(CH_2)_{1-6}Cl$, $-(CH_2)_{1-6}F$, $-(CH_2)_{1-6}Br$, $-(CH_2)_{1-6}I$, $-(CF_3)_{1-3}$, $-(CH_2)_{1-6}(CF_3)$, $-(CH_2)_{1-6}CN$, $-(CH_2)_{0-6}NO_2$, $-C_{1-6}$ alkyl, $-(CH_2)_{0-4}CH=(CH)_{0-1}-(CH_2)_{0-4}(CH_2)_{0-1}$, $-C_{0-6}$ alkyl-O- C_{1-6} alkyl, $-C_{0-6}$ alkyl-O- C_{2-6} alkenyl, $-C_{2-6}$ alkenyl-O- C_{1-6} alkyl, $-C_{2-6}$ alkenyl-O- C_{1-6} alkyl, 15 $-C_{2-6}$ alkinyl-O- C_{1-6} alkyl, $-C_{6-10}$ aryl, $-C_{0-6}$ alkyl-O- C_{6-10} aryl, $-C_{0-6}$ alkyl-S(=O) $_{0-2}$ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O) $_{0-2}$ $-C_{2-6}$ alkenyl, $-C_{2-6}$ alkenyl-S(=O) $_{0-2}$ $-C_{1-6}$ alkyl, $-C_{0-6}$ alkyl-S(=O) $_{0-2}$ $-C_{1-6}$ alkinyl, $-C_{0-6}$ alkyl-C $|C_{6-10}$ aryl, $-C_{2-6}$ alkenyl-C $|C_{6-10}$ aryl, $-C_{2-6}$ alkinyl-C $|C_{6-10}$ aryl, $-C_{0-6}$ alkyl-COO- C_{2-6} alkenyl, $-C_{0-6}$ alkyl-COO- C_{2-6} alkinyl, $-C_{2-6}$ alkenyl-COO- C_{1-6} alkyl, 20 $-C_{2-6}$ alkinyl-COO- C_{1-6} alkyl, $-C_{2-6}$ alkenyl-COO- C_{1-6} alkyl, $-C_{2-6}$ alkinyl-COO- C_{1-6} alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^{34a} and R^{34b} are each as described above. The alkyl, alkenyl, and alkinyl portions of R^{34a} and R^{34b} may be linear or branched and may be substituted with from 0-6 members independently selected 25 from the group consisting of $-I$, $-F$, $-Br$, $-OH$, $-NO_2$, $-CF_3$, $-CHO$, $-NH_2$ and $-COOH$. R^{34a} and R^{34b} may be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S.
- Z is selected from the group consisting of a bond, $-C_{1-6}$ alkylene-, 30 $-(CH_2)_{0-6}O-(CH_2)_{0-6}$, $-(CH_2)_{0-6}N(R^{36})-(CH_2)_{0-6}$, $-(CH_2)_{0-6}C(=N(R^{36}))(CH_2)_{0-6}$, $-(CH_2)_{0-6}C(=O)-(CH_2)_{0-6}$, $-(CH_2)_{0-6}C(=O)-O-(CH_2)_{0-6}$, $-(CH_2)_{0-6}O-C(=O)-(CH_2)_{0-6}$, $-(CH_2)_{0-6}C(=O)-N(R^{36})(CH_2)_{0-6}$, $-(CH_2)_{0-6}N(R^{36})(CH_2)_{0-6}$, $-(CH_2)_{0-6}O-C(=O)-O-(CH_2)_{0-6}$, $-(CH_2)_{0-6}O-C(=O)-N(R^{36})(CH_2)_{0-6}$, $-(CH_2)_{0-6}N(R^{36})-C(=O)-N(R^{37})(CH_2)_{0-6}$, 35 $-(CH_2)_{0-6}S-(CH_2)_{0-6}$, $-(CH_2)_{0-6}S(O)-(CH_2)_{0-6}$, $-(CH_2)_{0-6}S(O)_2(CH_2)_{0-6}$, $-(CH_2)_{0-6}S(O)_2N(R^{36})(CH_2)_{0-6}$, $-(CH_2)_{0-6}N(R^{36})SO_2(CH_2)_{0-6}$, and $-(CH_2)_{0-6}N(R^{36})SO_2N(R^{37})(CH_2)_{0-6}$;

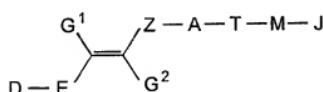
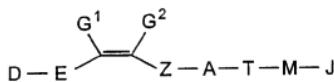
structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

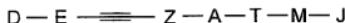
- R^{36a} and R^{36b} are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{36a}R^{36b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{36a}R^{36b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{36a}R^{36b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
- 10 -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkenyl, -C₀₋₅alkenyl-O-C₁₋₆alkenyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of R^{36a} and R^{36b} may be linear or branched and may be substituted with
- 20 from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^{36a} and R^{36b} may be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond with a resulting three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S.
- 25 M is selected from the group consisting of a bond, -C₁₋₆alkylene-, -(CH₂)₀₋₆O-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=N(R³⁸))(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(=O)O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-C(=O)O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-C(=O)-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(CH₂)₀₋₆-, -(CH₂)₀₋₆S(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁸)-SO₂-(CH₂)₀₋₆-, and -(CH₂)₀₋₆-N(R³⁸)-SO₂-N(R³⁸)-(CH₂)₀₋₆;
- 30 R³⁸ and R³⁹ are independently a member selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{38a}R^{38b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{38a}R^{38b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,

- C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{38a}R^{38a}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl,
 -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN,
 -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
 -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₃alkyl-O-C₂₋₆alkinyl,
 5 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,
 -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
 , -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl,
 -C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
 10 -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkenyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
 -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl,
 and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
 containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and
 alkinyl portions of each of R³⁸ and R³⁹ may be linear or branched and may be
 substituted with from 0-6 members independently selected from the group consisting of
 15 -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R³⁸ and R³⁹ may be taken
 together or with a carbon atom having a free hydrogen to form an intracyclic bond
 resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms
 selected from N, O and S.
- R^{38a} and R^{38b} are each a member independently selected from the group
 20 consisting of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F,
 -(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂CN,
 -(CH₂)₀₋₁₂NO₂, -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{38a})(R^{38b})₀₋₁C₀₋₁₂alkyl,
 -(CH₂)₀₋₁₂CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{38a})(R^{38b})₀₋₁C₀₋₁₂alkyl,
 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
 25 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl,
 -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^{38a})(R^{38b})₀₋₁C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
 , -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
 , -C₁₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂
 C₆₋₁₀aryl, -C₀₋₁₂alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH,
 30 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl,
 -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-
 COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring
 structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic
 ring structure containing 1-4 heteroatoms selected from N, O and S;
- R^{38a} and R^{38b} are each independently selected from the group consisting of H,
 35 -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,
 -C₀₋₆alkyl-NR^{38a}R^{38b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,

- $-C_{0-6}$ alkenyl-COOH, $-C_{0-6}$ alkenyl-NR^{38a}R^{38b}, $-C_{0-6}$ alkinyl-SH, $-C_{0-6}$ alkinyl-OH,
 $-C_{0-6}$ alkinyl-CHO, $-C_{0-6}$ alkinyl-COOH, $-C_{0-6}$ alkinyl-NR^{38a}R^{38b}, $-C_{1-6}$ alkyl, $-(CH_2)_{1-6}Cl$,
 $-(CH_2)_{1-6}F$, $-(CH_2)_{1-6}Br$, $-(CH_2)_{1-6}I$, $-(CF_2)_{1-3}(CF_3)$, $-(CH_2)_{1-6}(CF_3)$, $-(CH_2)_{1-6}CN$,
 $-(CH_2)_{0-6}NO_2$, $-C_{1-6}$ alkyl, $-(CH_3)_{0-4}CH=CH(CH_3)_{0-1}(CH_2)_{0-4}(CH_3)_{0-1}$, $-C_{0-3}$ alkyl-O-C₁₋₆alkyl,
5 $-C_{0-3}$ alkyl-O-C₂₋₆alkenyl, $-C_{2-6}$ alkenyl-O-C₁₋₆alkyl, $-C_{2-6}$ alkinyl, $-C_{0-5}$ alkyl-O-C₂₋₆alkinyl,
 $-C_{2-6}$ alkinyl-O-C₁₋₆alkyl-, $-C_{6-10}$ aryl, $-C_{0-6}$ alkyl-O-C₆₋₁₀aryl, $-C_{0-6}$ alkyl-S(=O)₀₋₂C₁₋₆alkyl,
 $-C_{0-6}$ alkyl-S(=O)₀₋₂C₂₋₆alkenyl, $-C_{2-6}$ alkenyl-S(=O)₀₋₂C₁₋₆alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂
 $-C_{1-6}$ alkinyl, $-C_{2-6}$ alkinyl-S(=O)₀₋₂C₁₋₆alkyl, $-C_{0-6}$ alkyl-S(=O)₀₋₂C₆₋₁₀aryl,
 $-C_{0-6}$ alkyl-C₆₋₁₀aryl, $-C_{2-6}$ alkenyl-C₆₋₁₀aryl, $-C_{2-6}$ alkinyl-C₆₋₁₀aryl, $-C_{0-6}$ alkyl-COO-C₁₋₆alkyl,
10 $-C_{0-6}$ alkyl-COO-C₂₋₆alkenyl, $-C_{0-6}$ alkyl-COO-C₂₋₆alkinyl, $-C_{2-6}$ alkenyl-COO-C₁₋₆alkyl,
 $-C_{2-6}$ alkinyl-COO-C₁₋₆alkyl, $-C_{2-6}$ alkenyl-COO-C₁₋₆alkyl, $-C_{2-6}$ alkinyl-COO-C₁₋₆alkyl,
and a three to ten membered monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and
alkinyl portions of R^{38a} and R^{38b} may be linear or branched and may be substituted with
15 0-6 members independently selected from the group consisting of -I, -F, -Br,
-OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^{38a} and R^{38b} may be taken together or
with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a
three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N,
O and S.
- 20 According to the invention, a compound of formula I includes all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

Preferred compounds of the invention include those compounds of following formulae IIa, IIb, and IIc:





IIc

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In formulae IIa, IIb, and IIc, D, E, G¹, G², Z, A, T, M, J and their respective substituents are each as described above for formula I. Preferably, for G¹ and G² of formulae IIa and IIb:

X is selected from the group consisting of -N-, -O-, -C(=O)-, -S-, -SO-, and -SO₂-;

r and t are each independently an integer from 0-6; and

R¹ is a member independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl.

More preferably, for compounds of formulae IIa and IIb:

X is selected from the group consisting of -N-, -O-, -C(=O)-, -S-, -SO-, and -SO₂-;

r and t are each independently an integer from 0-6;

R¹ is a member independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl; and

R groups of E, A and T are independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl, wherein 0 to 4 R groups may be present in each of E, A and T, and wherein two R groups independently on either or all of E, A and T may combine to form a methylenedioxy or ethylene dioxy group.

More preferably, for compounds of formulae IIa, IIb and IIc, E, A and T are independently selected from the group consisting of phenyl, naphthyl, biphenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 1,2-pyrimidyl, 1,3-pyrimidyl, 1,4-pyrimidyl, morpholinyl, thiomorpholinyl, piperidinyl, thiophenyl, oxazolyl, isoxazolyl, thiazolyl, 5 isothiazolyl, imidazolyl and triazole, where E, A and T independently have 0 to 4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₄cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl.. According to the invention, two R 10 groups taken together may form a methylenedioxy or ethylenedioxy group. Also according to the invention, two R groups may cyclize with a monocyclic heterocyclic group of E, A or T to form a bicyclic heterocyclic group.

Even more preferred are compounds according to each of formulae IIa and IIb, where J¹ is selected from the group consisting of H, -CN, -NR⁹R¹⁰,

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R⁴, R⁶, R⁹ and R¹⁰ are independently selected from the group consisting of H, -(CH₂)₀₋₆-SH, -(CH₂)₀₋₆-OH, -(CH₂)₀₋₆-NH₂, -(CH₂)₀₋₆-Cl, -(CH₂)₀₋₆-F, -(CH₂)₀₋₆-Br, -(CH₂)₀₋₆-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₆-(CF₃), -(CH₂)₀₋₆-CN, -(CH₂)₀₋₆-NO₂, -(CH₂)₀₋₆-CHO, 20 -C₁₋₆alkyl, -C₀₋₆alkyl-N(R⁹)(R¹⁰)₀₋₁-C₀₋₆alkyl, -(CH₂)₀₋₆-CH=(CH)₀₋₁-(CH₂)₀₋₆(CH₃)₀₋₁, -O-C₁₋₆alkyl-N(R⁹)(R¹⁰)₀₋₁-C₀₋₆alkyl, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₆alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂, 25 -C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -COOH, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₆alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₆alkyl,

- C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₆alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure selected from the group consisting of phenyl and naphthyl, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure selected from the group consisting of benzimidazolyl, benzofuranyl, benzothiofuranyl, 5 benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzoisoxazolyl, benzisothiazolyl, benzimidazaliny, carbazolyl, 4aH-carbazolyl, carboliny, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazoliny, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, 10 isobenzofuranyl, isochromanyl, isoindazolyl, isoindoliny, isoindolyl, isoquinolinyl, isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxythiinyl, phenoxazinyl, phthalazinyl, piperazinyl, 15 piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazoliny, pyrazolyl, pyridazinyl, pyridoaxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, tetrahydroquinolinyl, 6H-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl, 20 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thietyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl;
- R^a and R^b are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-N R^aR^d, 25 -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-N R^aR^d, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-N R^aR^d, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₃)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)(CH₂)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₀₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl-, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl-, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl, 30 -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₂₋₆alkinyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure selected

from the group consisting of benzimidazolyl, benzofuranyl, benzothiofuranyl, benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzoisoxazolyl, benzisothiazolyl, benzimidazalinyl, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinoilinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, isozenzofuranyl, isochromanyl, isoindazolyl, isoindolinyl, isoindolyl, isoquinolinyl, isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, 10 oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, 15 quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, tetrahydroquinolinyl, 6H-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thietyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl, wherein the alkyl, alkenyl, 20 and alkynyl portions of R^a and R^b may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH. R^a and R^b may be taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S;

25 R^{c1} and R^{d1}: are independently selected from the group consisting of H, C₁₋₆alkyl-CHO, C₀₋₆alkyl-COOH, C₀₋₆alkyl-COCl, C₀₋₆alkyl-COI, C₀₋₆alkyl-COF, C₀₋₆alkyl-COBr, C₀₋₆alkyl-COO-C₁₋₆alkyl, C₁₋₆alkyl-COO-C₂₋₆alkenyl, C₁₋₆alkyl-COO-C₂₋₆alkinyl, C₀₋₆alkyl-COO-C₀₋₆alkyl-CF₃, C₁₋₆alkyl-COO-C₆₋₁₀aryl-COOH, C₀₋₆alkyl-CN, C₁₋₆alkyl-NO₂, C₁₋₆alkyl-Cl, C₁₋₆alkyl-Br, C₁₋₆alkyl-I, C₁₋₆alkyl-F, 30 C₀₋₆alkyl-CF₃, C₁₋₆alkyl-CF₂-CF₃, C₁₋₆alkyl-SH, C₁₋₆alkyl, C₁₋₆alkenyl, C₁₋₆alkynyl, C₁₋₆alkyloxy, C₁₋₆alkenyloxy, C₁₋₆alkylthio, C₁₋₆alkenylthio, C₃₋₈cycloalkyl, C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, a three to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S; and C₁₋₆alkylheterocyclic monocyclic or bicyclic ring system having in the ring system 3 to 10 atoms with 1-4 of 35 such atoms being selected from N, O and S;

alternatively, R⁹ and R¹⁰ taken together can form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected

from N, O and S;

R^7 and R^8 are each independently selected from the group consisting of H,

- $(CH_2)_{0-6}$ -SH, - $(CH_2)_{0-6}$ -OH, - $(CH_2)_{0-6}$ -NH₂, - $(CH_2)_{0-6}$ -Cl, - $(CH_2)_{0-6}$ -F, - $(CH_2)_{0-6}$ -Br,

$-(CH_2)_{0-5}I$, $-(CF_2)_{1-5}-(CF_3)$, $-(CH_2)_{0-6}-(CF_3)$, $-(CH_2)_{0-6}-CN$, $-(CH_2)_{0-6}-NO_2$, $-(CH_2)_{0-6}$

- 5 -C₁₋₆alkyl, -C₀₋₆alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₆alkyl, -(CH₂)₀₋₆CH=CH(CH=CH)₀₋₁(CH₂)₀₋₆(CH₃)₀₋₁,
 -O-C₁₋₆alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₆alkyl, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl,
 -C₂₋₁₂alkenyl-O-C₁₋₆alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-,
 -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₆alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₆alkyl,
 -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂
 10 -C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆aryl,
 -C₂₋₁₂alkenylC₆₋₁₀aryl, -COOH, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₁₂alkenyl,
 -C₀₋₆alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₆alkyl,
 -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₆alkyl, -C₆₋₁₀aryl monocyclic or
 15 bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic
 heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where
 R^a, R^b, R^c and R^d are each as described above for this embodiment.

Alternatively, R^7 or R^8 , independently, may be taken with either R^5 or R^6 , to form a 3 to 10 membered heterocyclic monocyclic or bicyclic ring containing from 1-4 atoms selected from N, O and S. R^7 or R^8 , independently taken with either R^5 or R^6 may form a 3 to 10 membered heterocyclic monocyclic or bicyclic ring containing from 1-4 atoms selected from N, O and S.

In another preferred embodiment of the invention, ring structures E, A, and T of formulae IIa and IIb are independently a member selected from the group consisting of

- 25 phenyl, naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, imidazolyl and triazole, indolyl, and quinolinyl, which may be independently substituted with 0 to 4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH and -COO-C₁₋₆alkyl.
30 According to the invention, two R groups may combine to form a methylenedioxy or ethylenedioxy group.

In another preferred embodiment of the invention, ring structures E, A and T of formulae IIa and IIb are independently a member selected from the group consisting of

phenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl and imidazolyl, which may be substituted with 0 to 4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, and -O-C₁₋₆alkyl.

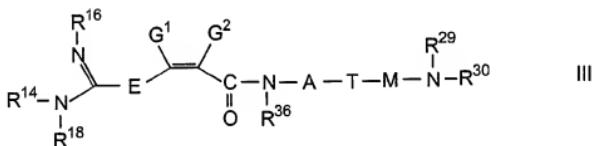
5 In a more preferred embodiment of the invention, ring structures E, A and T of formulae IIa and IIb are independently a member selected from the group consisting of phenyl, 2-pyridyl, 3-pyridyl and 4-pyridyl, which may be substituted with 0 to 4 R groups which are independently a member selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl and -O-C₁₋₆alkyl.

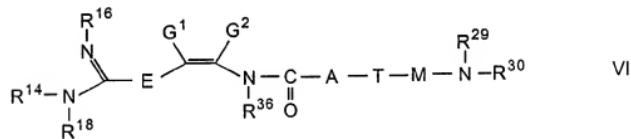
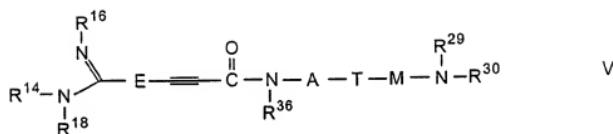
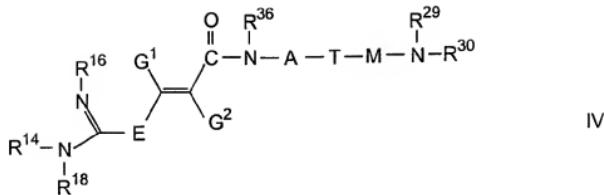
10 Preferably, ring structures E, A and T of formulae IIa and IIb are substituted with 0 to 2 R groups which are independently a member selected from the group consisting of H, -OH, -Cl, -F, -Br, -I, -CF₃, -CCl₃, -CClF₂, -CN, -NO₂, -CH₃, -CH₂-CH₃, -CH₂-CH₂-CH₃, -CH-(CH₃)₂, -CH₂-CH₂-CH₂-CH₃, -O-CH₃, -O-CH₂-CH₃, and -O-CH₂-CH₂-CH₃. More preferably each R group is a member independently selected 15 from the group consisting of H, -OH, -Cl, -F, -Br, -I, -CF₃, -CCl₃, -CClF₂, -CH₃, -CH₂-CH₃, -O-CH₃ and -O-CH₂-CH₃. Most preferably, each R group is a member independently selected from the group consisting of H, -OH, -F, -CF₃, and -CH₃.

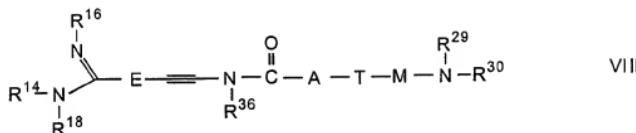
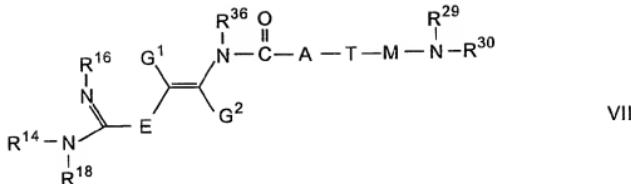
In each of the preferred aspects of the formula IIa and IIb compounds, preferably, Z is selected from the group consisting of -(CH₂)₀₋₆O-(CH₂)₀₋₆-, 20 -(CH₂)₀₋₆C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=N(R³⁶))-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆S-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-SO₂-(CH₂)₀₋₆-, and -(CH₂)₀₋₆N(R³⁶)-SO₂-N(R³⁷)-(CH₂)₀₋₆ where R³⁶ and R³⁷ are as described above for 25 formula I. More preferably, Z is selected from the group consisting of -(CH₂)₀₋₆C(=O)-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-N(R³⁶)-(CH₂)₀₋₆ and -(CH₂)₀₋₆N(R³⁶)-SO₂-(CH₂)₀₋₆, where R³⁶ is as described above for formula I. Even more preferably, Z is selected from the group 30 consisting of -(CH₂)₀₋₆C(=O)-N(R³⁶)-(CH₂)₀₋₆ and -(CH₂)₀₋₆N(R³⁶)-C(=O)-(CH₂)₀₋₆, where R³⁶ is as described above for formula I. Most preferably, Z is selected from the group consisting of -C(=O)-N(R³⁶)- and -N(R³⁶)-C(=O)-, where R³⁶ is as described above for formula I.

- Also, in each of the preferred aspects of the formula IIa and IIb compounds, preferably M is selected from the group consisting of -(CH₂)₀₋₆-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-O-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-,
- 5 -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-N(R³⁸)-(CH₂)₀₋₆-, where R³⁸ is as described above for formula I. More preferably, M is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, and -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆-, where R³⁸ is as described above for formula I. Even more
- 10 preferably, M is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, and -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, where R³⁸ is as described above for formula I. Most preferably, M is selected from the group consisting of -C(=O)-, -S(O)₂-, and -C(=N(R³⁸))-, where R³⁸ is as described above for formula I.

Preferred compounds of the invention also include those compounds of
15 following formulae III, IV, V, VI, VII and VIII:







In formulae III, IV, V, VI, VII and VIII, E, A, T, M, G¹, G², R¹⁴, R¹⁶, R¹⁸, R²⁹, R³⁰, and R³⁶ are each as described above for formula I.

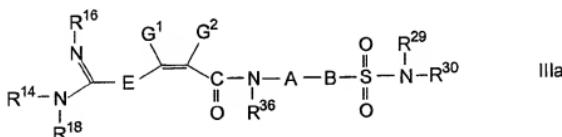
- 5 Preferably, in formulae III, IV, V, VI, VII and VIII, M is selected from the group consisting of -(CH₂)₀₋₆-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆-C(=O)-O-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-O-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆-S(O)-CH₂-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, and -(CH₂)₀₋₆-S(O)₂-N(R³⁸)-(CH₂)₀₋₆-, where R³⁸ is as
 10 described above for formula I. More preferably, M is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, and -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆-, where R³⁸ is as described above for formula I. Even more preferably, M is selected
 15 from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, and
 -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-, where R³⁸ is as described above for formula I. Most
 preferably, M is selected from the group consisting of -C(=O)-, -S(O)₂-, and
 -C(=N(R³⁸))-, where R³⁸ is as described above for formula I. Preferably, R³⁸ is
 hydrogen, lower alkyl, lower alkenyl, lower alkyl comprising at least one halogen atom in
 20 place of a hydrogen atom and lower alkenyl comprising at least one halogen atom in
 place of a hydrogen atom. Alternatively R³⁸ may be taken together with R²⁹ or R³⁰ of J

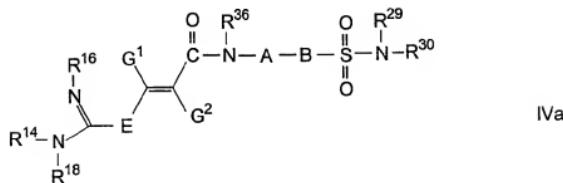
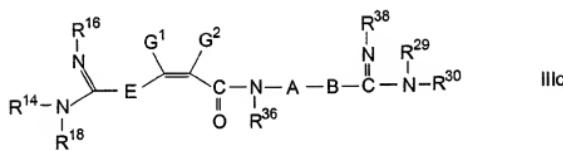
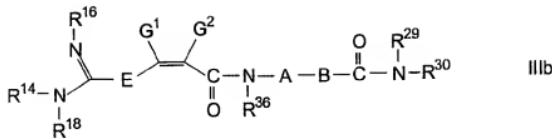
to form an aromatic or non-aromatic 3 to 12 member heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S.

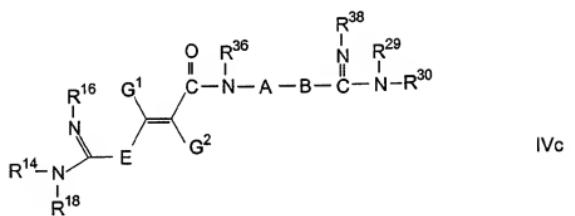
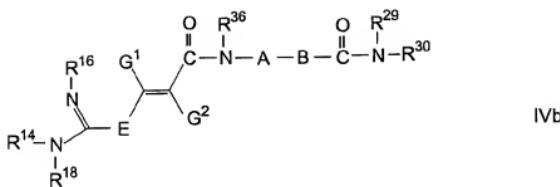
- Further preferred are compounds of formulae III, IV, V, VI, VII and VIII, where the carbocyclic and heterocyclic substituents and the carbocyclic and heterocyclic E, A 5 and T groups, if present, may be unsubstituted or substituted with a group independently selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, adamantyl, cyclooctyl, [3.3.0]bicyclooctane, [4.3.0]bicyclonanane, [4.4.0]bicyclodecane, [2.2.2]bicyclooctane, fluorenyl, phenyl, naphthyl, indanyl, adamantlyl, tetrahydronaphthyl, benzimidazolyl, benzofuranyl, 10 benzothifuranyl, benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzisoxazolyl, benzisothiazolyl, benzimidazaliny, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 15 3H-indolyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindolinyl, isoindolyl, isoquinolinyl, isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxythiinyl, 20 phenoxyazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, 25 tetrahydroquinolinyl, 6H-1,2,5-thiadazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thietyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl.

- More preferably, the carbocyclic and heterocyclic substituents and the 30 carbocyclic and heterocyclic E, A and T groups, if present, may be unsubstituted or substituted with a group independently selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, adamantlyl, cyclooctyl, [3.3.0]bicyclooctane, [4.3.0]bicyclonanane, [4.4.0]bicyclodecane, [2.2.2]bicyclooctane, fluorenyl, phenyl, naphthyl, indanyl, adamantlyl, tetrahydronaphthyl, benzimidazolyl, 35 benzofuranyl, benzothifuranyl, benzothiophenyl, benzoxazolyl, benzthiazolyl,

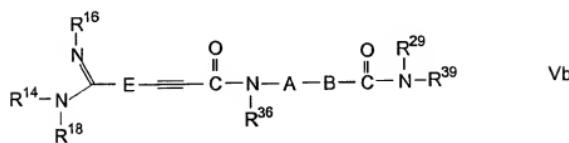
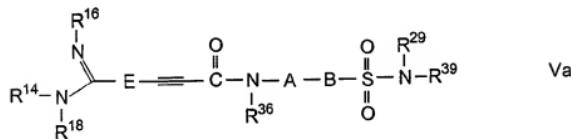
- benzisoxazolyl, benzisothiazolyl, benzimidazalanyl, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazoliny, imidazolyl, 1H-indazolyl, indolyl, 3H-indolyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindolyl, isoquinolinyl,
 5 isothiazolyl, isoxazolyl, morpholinyl, oxadiazolyl, 1,2,3-oxadiazolyl, oxazolyl, pyrimidinyl, piperazinyl, piperidinyl, pyrazolyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinolinyl, 4H-quinolizinyl, tetrahydrofuranyl, thiazolyl, thieryl, thienothiazolyl, thienooxazolyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl.
- 10 Without limiting the scope of the invention, examples of the preferred embodiments for E, A, T, G¹ and G² are set forth in Table 1 below for each of the preferred compounds of formulae IIIa, IIIb, IIIc, IVa, IVb, IVc, Va, Vb, Vc, VIa, VIb, VIc, VIIa, VIIb, VIIc, VIIIa, VIIIb and VIIIC as set forth below. In formulae IIIa, IIIb, IIIc, IVa, IVb, IVc, Va, Vb, Vc, VIa, VIb, VIc, VIIa, VIIb, VIIc, VIIIa, VIIIb and
 15 VIIIc, R¹⁴, R¹⁶, R¹⁸, R²⁹, R³⁰, R³⁶ and R³⁸ each are as described above for formula I. Further preferred are those compounds where R¹⁴, R¹⁶, R¹⁸, R²⁹, R³⁰, R³⁶ and R³⁸, if present, are independently selected from hydrogen, lower alkyl and lower alkenyl. To simplify matters, examples of preferred E, A, T, G¹ and G² groups for each of formulae IIIa, IIIb, IIIc, IVa, IVb, IVc, Va, Vb, Vc, VIa, VIb, VIc, VIIa, VIIb, VIIc, VIIIa, VIIIb and VIIIc have been summarized in single Table 1. Each set of E, A, T, G¹ and G² groups may be applied independently to each compound of formulae IIIa, IIIb, IIIc, IVa, IVb, IVc, Va, Vb, Vc, VIa, VIb, VIc, VIIa, VIIb, VIIc, VIIIa, VIIIb and VIIIc. However, since G¹ and G² are absent in formulae Va, Vb, Vc and VIIIa, VIIIb and VIIIc, only E, A and T listed in Table 1 apply to these formulae.
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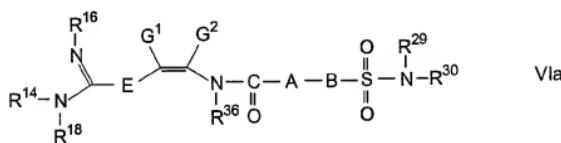
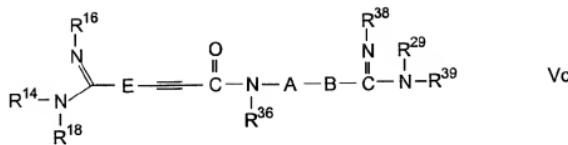




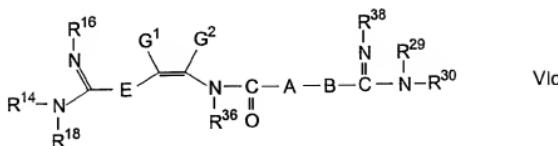
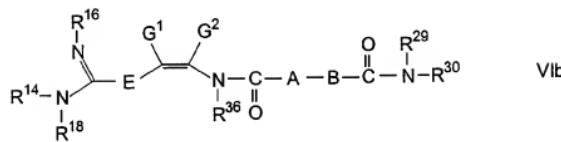


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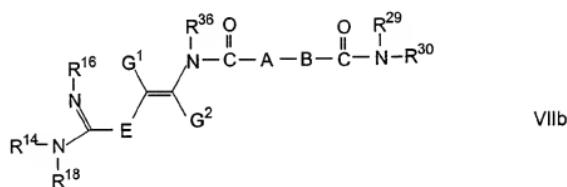
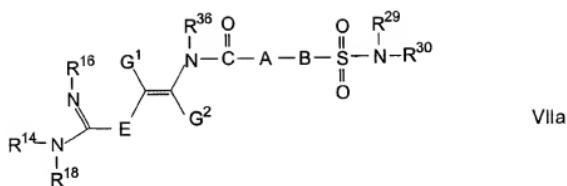




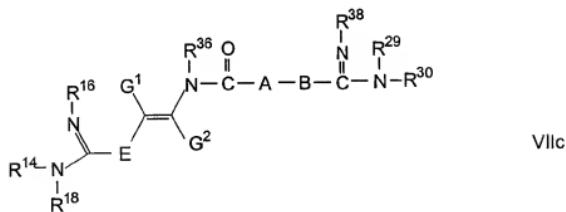
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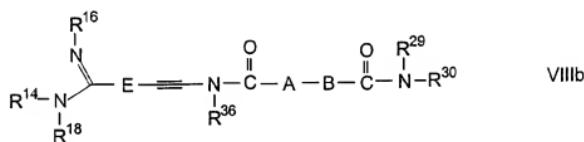
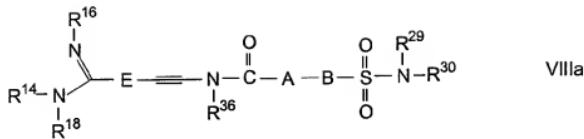


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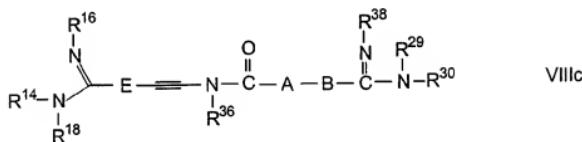


Table 1

E	A	T	G ¹	G ²
			-H	-H
			-CH ₃	-H
			-H	-CH ₃
			-CH ₃	-CH ₃
			-CH ₂ —CH ₂ —CH ₂ —	
			-CH ₂ =CH ₂ —CH ₂ —	
			-CH ₂ —CH ₂ =CH ₂ —	
		—	-H	-H
		—	-CH ₃	-H
	—		-H	-H
	—		-CH ₃	-H

Table 1 (Cont. 2 of 5)

E	A	T	G ¹	G ²
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H

Table 1 (Cont. 3 of 5)

E	A	T	G ¹	G ²
			-H	-H
		<img alt="Chemical structure T: A benzene ring with a methyl group (-CH3) at the		

Table 1 (Cont. 4 of 5)

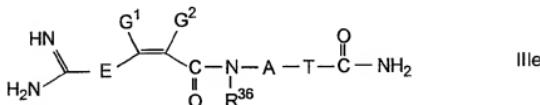
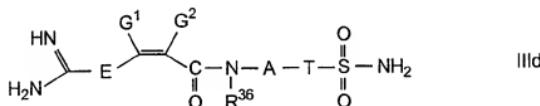
E	A	T	G ¹	G ²
			-H	-H
			-H	

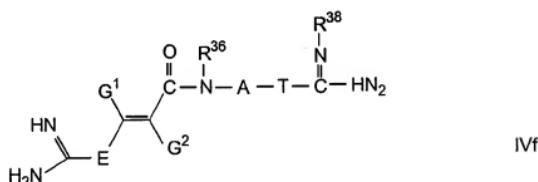
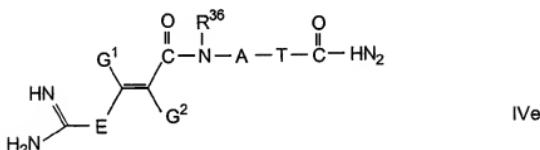
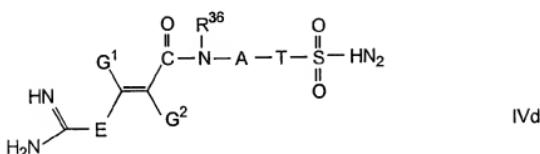
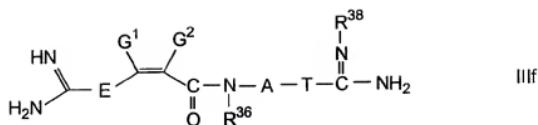
Table 1 (Cont. 5 of 5)

E	A	T	G ¹	G ²
			-H	-H

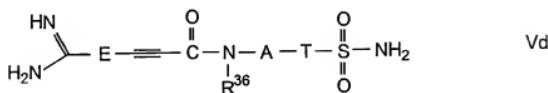
More preferred are compounds of formulae IIIa, IIIb, IIIc, IVa, IVb, IVc, Va, Vb, Vc, VIa, VIb, VIc, VIIa, VIIb, VIIc, VIIIa, VIIIb and VIIIc where E, A and T have 0 to 3 substituents selected from the group consisting of hydrogen, -CN, -NO₂, -OH, -SH, -Cl, -Br, -I, -F, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, pentyl, 5 isopentyl, ethylenyl, propylenyl, methoxy, ethoxy, propoxy, isopropoxy, butoxy, isobutoxy, t-butoxy, trihalomethyl (in particular, trifluoromethyl), 1,1,1-trifluoroethyl, tetrahaloethyl, pentahaloethyl, ethylenyl, propylenyl, -MeOH, -EtOH, -PrOH, -MeSH, -EtSH, -PrSH, formyl, acetyl, and the like.

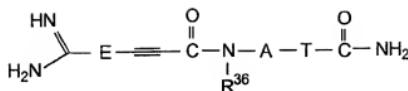
Without limiting the scope of the invention, examples of the preferred 10 embodiments for E, A, T, G¹ and G² are set forth in Table 2 below for each of the more preferred compounds of formulae IIId, IIIe, IIIf, IVd, IVe, IVf, Vd, Ve, Vf, VId, VIe, VIIf, VIIId, VIIe, VIIIf, VIIId, VIIle and VIIIf as set forth below. R³⁶ is independently selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, t-butyl, pentyl, isopentyl, methoxy, ethoxy, propoxy, trihalomethyl, and 15 pentahaloethyl. To simplify matters, examples of preferred E, A, T, G¹ and G² groups for each of formulae IIId, IIIe, IIIf, IVd, IVe, IVf, Vd, Ve, Vf, VId, VIe, VIIf, VIIId, VIIle, VIIIf, VIIId, VIIle and VIIIf have been summarized in single Table 2. Each set of E, A, T, G¹ and G² groups may be applied independently to each compound of formulae IIId, IIIe, IIIf, IVd, IVe, IVf, Vd, Ve, Vf, VId, VIe, VIIf, VIIId, VIIle, 20 and VIIIf. However, since G¹ and G² are absent in formulae Vd, Ve, Vf, VIIId, VIIle and VIIIf, only E, A and T listed in Table 2 apply to these formulae.





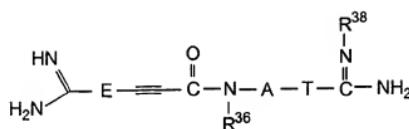
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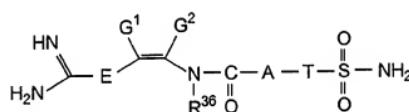


Ve

5

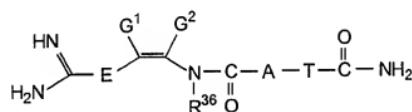


Vf

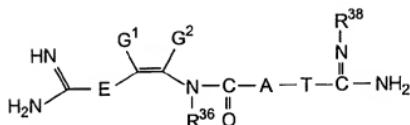


VId

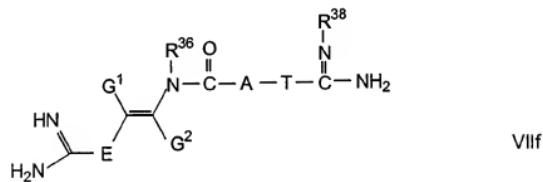
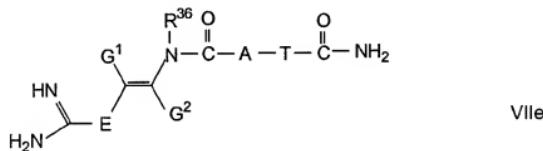
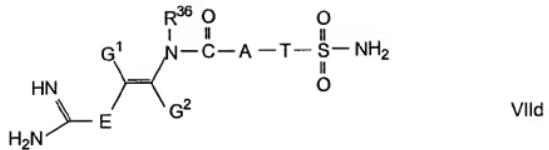
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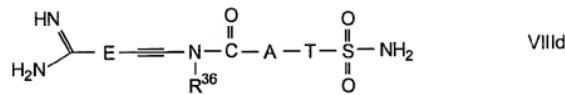
Vle



Vlf

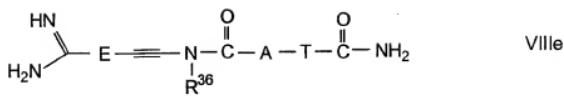


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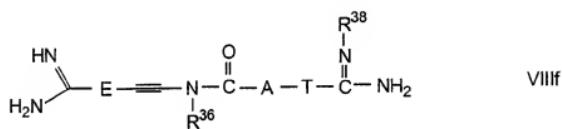


Table 2

E	A	T	G ¹	G ²
			-H	-H
			-CH ₃	-H
			-H	-CH ₃
			-CH ₃	-CH ₃
			-CH ₂ —CH ₂ —CH ₂ —	
			-CH ₂ =CH ₂ —CH ₂ —	
			-CH ₂ —CH ₂ =CH ₂ —	
		—	-H	-H
		—	-CH ₃	-H
	—		-H	-H
	—		-CH ₃	-H

Table 2 (Cont. 2 of 5)

E	A	T	G ¹	G ²
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H
			-H	-H

Table 2 (Cont. 3 of 5)

E	A	T	G ¹	G ²
			-H	-H
		<img alt="Chemical structure T: A benzene ring with a methyl group		

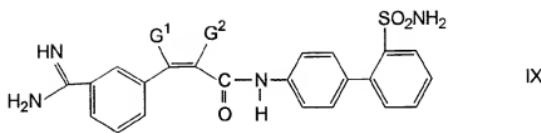
Table 2 (Cont. 4 of 5)

E	A	T	G ¹	G ²
			-H	-H
			-H	

Table 2 (Cont. 5 of 5)

E	A	T	G ¹	G ²
			-H	-H

Also preferred are the compounds set forth below in the following Tables 3-6:

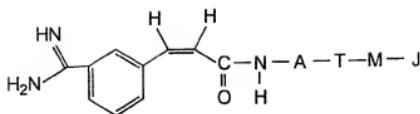
Table 3

G^1	G^2	G^1	G^2
$-CF_3$	$-H$	$-H$	$-H$
$-iPr$	$-H$	$-CH_3$	$-H$
$-H$	$\begin{matrix} O \\ \\ -C-NH_2 \end{matrix}$	$-H$	$-CH_3$
$-H$	$\begin{matrix} O \\ \\ -NH-C-CH_3 \end{matrix}$	$-CH_3$	$-CH_3$
$-H$	$\begin{matrix} O \\ \\ -NH-S(=O)(=O)-C_6H_4-COOH \end{matrix}$	$-CH_2-CH_2-CH_2-$	
$-H$	$-CH_2-\begin{matrix} \text{C}_5\text{H}_4\text{N} \\ \\ \text{C}_5\text{H}_4 \end{matrix}$	$-CH_2=CH_2-CH_2-$	
$-H$	$-F$	$-CH_2-CH_2=CH_2-$	

Table 3 (Cont. 2 of 2)

G ¹	G ²	G ¹	G ²
-CF ₃		-F	-H
-H		-H	
	-H	-H	
-H		-H	
	-H	-H	
-H	-COOH	-H	

Table 4 compounds are set forth below.

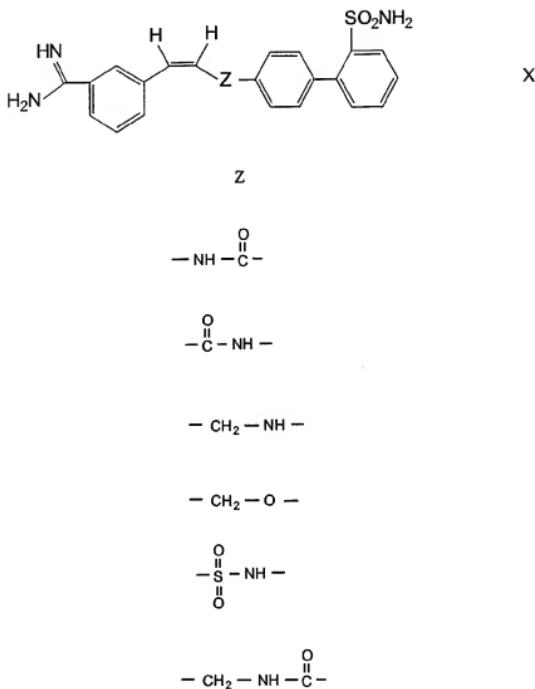
Table 4

X

A	B-F-J	A	B-F-J
-	-	-	-
-	-	-	-
-	-	-	-
-Cl	-	-	-
-F	-	-	-
-Br	-	-	-

Table 5 compounds are set forth below.

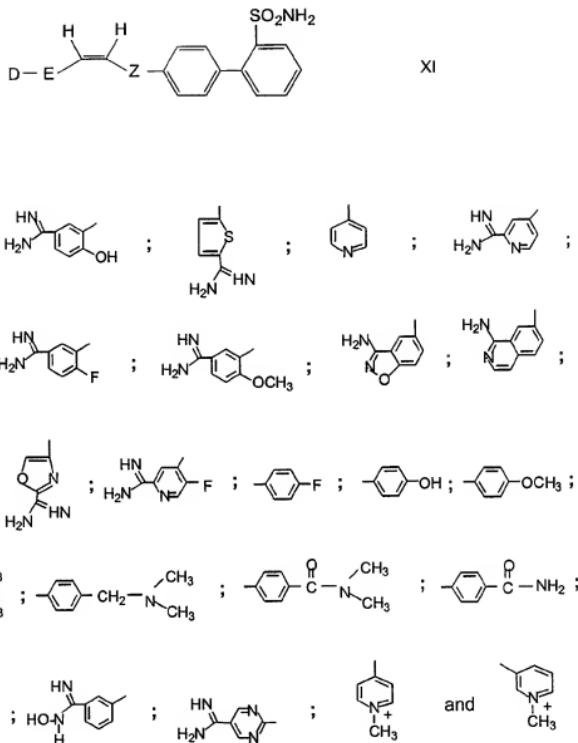
Table 5



5

Table 6 compounds are set forth below.

Table 6



5

The invention also encompasses all pharmaceutically acceptable isomers, salts, hydrates, and solvates of each of the compounds described above. In addition, such compounds can exist in various isomeric and tautomeric forms, and all such forms are

meant to be included in the invention, along with pharmaceutically acceptable salts, hydrates, and solvates of such isomers and tautomers.

The invention also encompasses prodrug derivatives of the compounds of the invention. The term "prodrug" as used herein refers to a pharmacologically inactive derivative or precursor of a compound of the invention which upon biotransformation, either spontaneous or enzymatic, within an organism releases the compound of the invention as a pharmaceutically active drug. Prodrug derivatives of compounds of the invention contain groups cleavable under metabolic conditions such as, for example, solvolysis under physiological conditions or enzymatic degradation. According to the 5 invention, compounds of the invention resulting from the biotransformation of their prodrug derivatives are pharmaceutically active *in vivo*. Prodrug derivatives of compounds of the invention may be designated as single, double, triple, etc., corresponding to the number of biotransformation steps required to release the pharmaceutically active compound of the invention within the organism and/or 10 indicating the number of functionalities present in the prodrug derivative. Prodrugs often offer advantages of solubility, tissue compatibility, or delayed release in the mammalian organism (see, Bundgard, Design of Prodrugs, pp. 7-9, 21-24, Elsevier, Amsterdam 1985 and Silverman, The Organic Chemistry of Drug Design and Drug Action, pp. 352-401, Academic Press, San Diego, CA, 1992).

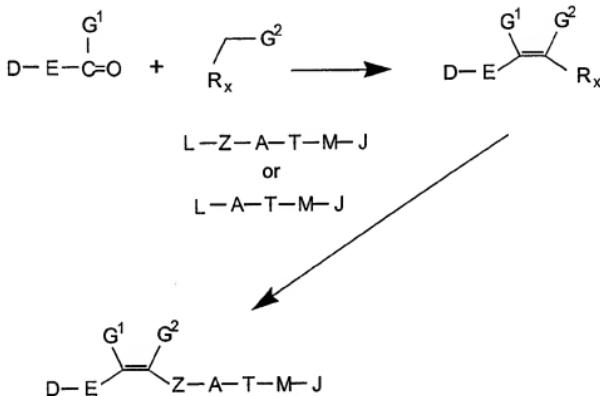
20 The compounds of the invention may be prepared by any means known in the art including solid, liquid, or gas phase methods or a combination thereof. For example, a compound of the invention may be prepared using known olefination and acetylation methods. Preferably, a compound of the invention may be prepared from a carbonyl compound under modified Wittig reaction conditions or by reduction of an 25 acetylene derivative precursor, each as would be recognized by one of skill in the art. A compound of the invention may also be prepared under nucleophilic displacement or elimination reaction conditions, each as would be recognized by one of skill in the art.

For example, an alkenyl compound of the invention may be synthesized by means of a Wittig-type coupling reaction followed by a displacement reaction as 30 illustrated in Scheme 1 below. As would be recognized by one of skill in the art, the reaction conditions for the coupling and displacement illustrated in Scheme 1 may be varied depending upon such factors as the reactants and the desired compound of the invention. In addition, various functional groups of the reactants may be blocked by protecting groups to prevent cross reaction during the coupling and displacement steps. 35 Examples of suitable blocking groups include those known in the art and as described

in standard organic textbooks.

Scheme 1

- In Scheme 1, L is a leaving group and R_x is a methylene activating group/leaving group.
- 5 D, E, G¹, G², Z, A, T, M and J are each as described above. Preferably, in Scheme 1, R_x is a Z methylene activating group.



10

The compounds of the invention may be prepared using reactants or starting materials commercially available from chemical vendors such as Aldrich, Sigma, Nova Biochemicals, Bachem Biosciences, and the like, or readily synthesized by known procedures.

- 15 The desired compound of the invention may be isolated and purified by conventional methods, typically by solvent extraction into a compatible solvent, followed by removal of the solvent. The products may be further purified by column chromatography or other appropriate methods. Racemic mixtures may be resolved utilizing methods standard in the art.

- Furthermore, as described above, the compounds of the invention may be isolated as the free acid or base or converted to pharmaceutically acceptable salts of various inorganic and organic acids and bases. Non-toxic and physiologically compatible salts are particularly preferred although other less desirable salts may be useful precursors in the synthesis, isolation and purification of the final desired compound. A pharmaceutically acceptable salt of a compound of the invention may be prepared using any means known in the art. For example, a salt of a compound of the invention may be prepared by reacting the free acid or free base form of a compound of the invention with one or more molar equivalents of, respectively, an appropriate base or acid in an organic or aqueous solvent or solvent mixture, and then removing the solvent(s). The solvent(s) may be removed using procedures known in the art including, but not limited to, evaporation, distillation, and freeze drying. Alternatively, the free acid or base form of a compound of the invention may be passed over an ion exchange resin to form the desired salt or to convert one salt form to another.
- Prodrug derivatives of compounds of the invention may also be prepared by any means known in the art. For example, an ester prodrug derivative of a compound of the invention may be prepared by reacting the corresponding acid compound of the invention with an alcohol while an amide prodrug derivative of a compound of the invention may be prepared by reaction of the corresponding acid compound of the invention with an amine. Likewise, basic groups found on a compound of the invention may be acylated to form an acylated prodrug derivative. Moreover, the prodrug derivatives of the invention may be combined with other features herein taught to enhance bioavailability.

25 Compositions and Methods of Treatment

The compounds of the invention, as described above, may be formulated into pharmaceutical compositions. Accordingly, the invention also provides a pharmaceutical composition comprising a pharmaceutically effective amount of a compound of the invention, as described above, and a pharmaceutically acceptable carrier.

Pharmaceutical compositions of the invention may be prepared for storage or administration by any means known in the art. For example, a pharmaceutical composition of the invention may be prepared by mixing a compound of the invention, preferably having a desired degree of purity, with a pharmaceutically or physiologically acceptable carriers or agent. Preferably, a pharmaceutical composition of the invention may be prepared by compounding about 0.5-500 mg, preferably, about 1-250 mg, more

preferably, about 1-80 mg, of at least one compound of the invention with a physiologically acceptable carrier or agent, each as described herein. The amount of active ingredient in these compositions is such that a suitable dosage in the range indicated is obtained.

- 5 A pharmaceutically acceptable carrier or agent may be any such carrier or agent known in the art. See, for example, in *Remington's Pharmaceutical Sciences*, Mack Publishing Co., (A.R. Gennaro edit. 1985). A pharmaceutical composition of the invention may further include a binder (e.g., acacia, corn starch or gelatin), an excipient (e.g., microcrystalline cellulose), a disintegrating agent (e.g., corn starch or alginic acid), a lubricant (e.g., magnesium stearate), a sweetening agent (e.g., sucrose or lactose), a buffer (e.g., phosphate, citrate, acetate and other organic acid salts), an antioxidant (e.g., ascorbic acid), a low molecular weight (less than about ten residues) peptide (e.g. polyarginine), a protein (e.g., serum albumin, gelatin, or immunoglobulins), a hydrophilic polymer (e.g., polyvinylpyrrolidinone), an amino acid (e.g., glycine, glutamic acid, aspartic acid, or arginine), a monosaccharide, a disaccharide, and other carbohydrates (e.g. cellulose or its derivatives, glucose, mannose or dextrins), a chelating agent (e.g., EDTA), sugar alcohol (e.g., mannitol or sorbitol), a counterion (e.g., sodium) and/or nonionic surfactants such as TWEEN, Pluronics or polyethyleneglycol. Additional acceptable adjuvants include those well known in the pharmaceutical field, and as described, for example, in *Remington's Pharmaceutical Sciences*, Mack Publishing Co., (A.R. Gennaro edit. 1985).
- 10
- 15
- 20

A pharmaceutical composition of the invention, especially when administered in capsule form, may also contain a liquid carrier such as, for example, water, saline, or a fatty oil. Other materials of various types may be used as coatings or as modifiers of the physical form of the pharmaceutical composition. For example, dissolution or suspension of the active compound of the invention in a vehicle such as an oil or a synthetic fatty vehicle like ethyl oleate, or into a liposome may be desired.

According to the invention, such materials as well as compounds of the invention are nontoxic to the recipients at the dosages and concentrations employed, i.e. are pharmaceutically acceptable.

In general, a compound of the invention, alone or as part of a pharmaceutical composition as described herein, may be used as a diagnostic or therapeutic agent for the prevention and/or treatment of a condition in a mammal characterized by undesired coagulation disorders (e.g., thrombotic and prothrombotic states in which the coagulation cascade is activated), preferably, for the treatment or prophylaxis of those

diseases which involve the production and/or action of factor Xa/prothrombinase complex. Preferably, a compound of the invention, alone or as part of a pharmaceutical composition, as described herein, may be used as a diagnostic or therapeutic agent in the prevention or treatment of a condition characterized by undesired thrombosis, such as (a) the treatment or prevention of any thrombotically mediated acute coronary syndrome including myocardial infarction, unstable angina, refractory angina, occlusive coronary thrombus occurring post-thrombolytic therapy or post-coronary angioplasty, (b) the treatment or prevention of any thrombotically mediated cerebrovascular syndrome including embolic stroke, thrombotic stroke or transient ischemic attacks, (c) the treatment or prevention of any thrombotic syndrome occurring in the venous system including deep venous thrombosis or pulmonary embolus occurring either spontaneously or in the setting of malignancy, surgery or trauma, (d) the treatment or prevention of any coagulopathy including disseminated intravascular coagulation (including the setting of septic shock or other infection, surgery, pregnancy, trauma or malignancy and whether associated with multi-organ failure or not), thrombotic thrombocytopenic purpura, thromboangiitis obliterans, or thrombotic disease associated with heparin induced thrombocytopenia, (e) the treatment or prevention of thrombotic complications associated with extracorporeal circulation (e.g., renal dialysis, cardiopulmonary bypass or other oxygenation procedure, plasmapheresis), (f) the treatment or prevention of thrombotic complications associated with instrumentation (e.g., cardiac or other intravascular catheterization, intra-aortic balloon pump, coronary stent or cardiac valve), and (g) those involved with the fitting of prosthetic devices.

Other conditions against which a compound of the invention, alone or as part of a pharmaceutical composition, are effective include, but are not limited to, reocclusion or restenosis of reperfused coronary arteries, thromboembolic complications of surgery and peripheral arterial occlusion.

Accordingly, the invention provides a method for preventing or treating a condition in a mammal characterized by undesired thrombosis comprising administering a therapeutically effective amount of at least one compound of the invention to a mammal, in particular, a human, each as described above.

Anticoagulant therapy is also useful to prevent coagulation of stored whole blood and to prevent coagulation in other biological samples for testing or storage. The compounds of the invention, alone or as part of a pharmaceutical composition, also find utility in inhibiting the coagulation of biological samples. Thus, the compounds of the invention, alone or as part of a pharmaceutical composition, may be added to or

contacted with any medium containing or suspected to contain factor Xa and in which it is desired that blood coagulation be inhibited (e.g., when contacting the mammal's blood with material such as vascular grafts, stents, orthopedic prostheses, cardiac stents, valves and prostheses, extra corporeal circulation systems and the like). Thus, the
5 invention also provides a method for inhibiting the coagulation of biological samples comprising the administration of at least one compound of the invention.

A compound of the invention, alone or as part of a pharmaceutical composition of the invention, is able to inhibit thrombus formation with acceptable effects on classical measures of coagulation parameters, platelets and platelet function, and
10 acceptable levels of bleeding complications associated with its use. Conditions characterized by undesired thrombosis would include those involving the arterial and venous vasculature. With respect to the coronary arterial vasculature, abnormal thrombus formation characterizes the rupture of an established atherosclerotic plaque which is the major cause of acute myocardial infarction and unstable angina, as well as
15 also characterizing the occlusive coronary thrombus formation resulting from either thrombolytic therapy or percutaneous transluminal coronary angioplasty (PTCA). With respect to the venous vasculature, abnormal thrombus formation characterizes the condition observed in patients undergoing major surgery in the lower extremities or the abdominal area who often suffer from thrombus formation in the venous vasculature
20 resulting in reduced blood flow to the affected extremity and a predisposition to pulmonary embolism. Abnormal thrombus formation further characterizes disseminated intravascular coagulopathy commonly occurs within both vascular systems during septic shock, certain viral infections and cancer, a condition wherein there is rapid consumption of coagulation factors and systemic coagulation which
25 results in the formation of life-threatening thrombi occurring throughout the microvasculature leading to widespread organ failure.

Compounds and pharmaceutical compositions of the invention are suitable for use alone or as part of a multi-component treatment regimen in combination with other therapeutic or diagnostic agents such as, for example, anticoagulant agents,
30 thrombolytic agents, or other antithrombotic agents (e.g., platelet aggregation inhibitors, tissue plasminogen activators, urokinase, prourokinase, streptokinase, heparin, aspirin, and warfarin). Coadministered compounds and agents may act in a synergistic fashion to, for example, prevent reocclusion following a successful thrombolytic therapy and/or reduce the time to reperfusion. Coadministration may also

allow for reduced doses of the thrombolytic agents to be used and therefore minimize potential hemorrhagic side-effects.

- The compounds and pharmaceutical compositions of the invention may be utilized *in vivo*, ordinarily in mammals such as primates, such as humans, sheep, horses, cattle, pigs, dogs, cats, rats and mice, or *in vitro*. The biological properties, as described above, of the compounds of the invention can be readily characterized by methods that are well known in the art including, for example, *in vitro* protease activity assays and *in vivo* studies to evaluate antithrombotic efficacy, and effects on hemostasis and hematological parameters, such as are illustrated in the examples.

10

- A compound or a pharmaceutical composition of the invention may be administered in solid or liquid form depending upon the desired application. For example, diagnostic applications will typically utilize compositions of the invention in the form of a solution or suspension. In the management of thrombotic disorders, a compound or pharmaceutical composition of the invention may be administered in solid form such as, for example, tablets, capsules, suppositories, in liquid form such as, for example, elixirs for oral administration, sterile solutions, sterile suspensions or injectable administration, and the like, or incorporated into shaped articles. A compound or a pharmaceutical composition of the invention may also be administered as sustained release and timed release formulations.

- A compound of the invention, alone or as part of a pharmaceutical composition, may also be administered in the form of implanted pellets and small cylinders, aerosols, oral dosage formulations and topical formulations such as ointments, drops and dermal patches. A compound or a pharmaceutical composition of the invention are preferably incorporated into shaped articles such as implants which may employ inert materials such as biodegradable polymers or synthetic silicones, for example, Silastic, silicone rubber or other commercially available polymers.

- A compound of the invention, alone or as part of a pharmaceutical composition, may be delivered as a liquid by means of a container having a sterile access port (e.g., an intravenous solution bag or vial having a stopper pierceable by hypodermic injection needle) or as part of a liposome delivery system (e.g. small unilamellar vesicles, large unilamellar vesicles and multilamellar vesicles). Liposomes can be formed from a variety of lipids, such as cholesterol, stearylamine or phosphatidylcholines.

A compound of the invention, alone or as part of a pharmaceutical composition, may also be delivered by coupling the compound to an antibody, an antibody fragment, a growth factor, a hormone, or other similar targeting/delivery vehicles. A compound of the invention, alone or as part of a pharmaceutical composition, may also be coupled with suitable polymers as targetable drug carriers. Such polymers include, but are not limited to, polyvinylpyrrolidone, pyran copolymer, polyhydroxy-propyl-methacrylamide-phenol, polyhydroxyethyl-aspartamide-phenol, or polyethyleneoxide-polylysine substituted with palmitoyl residues. Furthermore, compounds of the invention acting as factor Xa inhibitors alone or as part of a pharmaceutical composition may be coupled to a class of biodegradable polymers useful in achieving controlled release of a drug such as, for example, polylactic acid, polyglycolic acid, copolymers of polylactic and polyglycolic acid, polyepsilon caprolactone, polyhydroxy butyric acid, polyorthoesters, polyacetals, polydihydropyrans, polycyanoacrylates and cross linked or amphipathic block copolymers of hydrogels. Polymers and semipermeable polymer matrices may be formed into shaped articles, such as valves, stents, tubing, prostheses and the like.

Subjects, preferably mammalian, in need of treatment may be administered a therapeutically effective amount, *i.e.*, a dosage that will provide optimal efficacy, of a compound of the invention, alone or as part of pharmaceutical composition. As would be recognized by those of skill in the art, a "therapeutically effective amount" and mode of administration will vary from subject to subject and thus will be determined on a case by case basis. Factors to be considered include, but are not limited to, the subject (*e.g.* mammal) being treated, its sex, weight, diet, concurrent medication, overall clinical condition, the particular compounds employed, and the specific use for which these compounds are employed. Therapeutically effective amounts or dosages may be determined by either *in vitro* or *in vivo* methods.

Modes of administration include those known in the art such as, for example, by injection, intravenous (bolus and/or infusion), subcutaneous, intramuscular, colonic, rectal, nasal and intraperitoneal administration. Preferably, the mode of administration is by injection.

For injection by hypodermic needle, it may be assumed the dosage is delivered into the body's fluids. For other routes of administration, the absorption efficiency may be individually determined for each compound of the invention by methods well known in pharmacology. Accordingly, as would be understood by one of skill in the art, it may be necessary for the therapist to titer the dosage and modify the route of

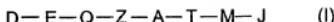
administration as required to obtain the optimal therapeutic effect. The determination of effective dosage levels, that is, the dosage levels necessary to achieve the desired result, will be within the ambit of one skilled in the art. Typically, a compound of the invention is administered at lower dosage levels, with dosage levels being increased 5 until the desired effect is achieved.

- A typical dosage might range from about 0.001 mg/kg to about 1000 mg/kg, preferably from about 0.01 mg/kg to about 100 mg/kg, and more preferably from about 0.10 mg/kg to about 20 mg/kg. Advantageously, the compounds of the invention alone or as part of a pharmaceutical composition may be administered several times daily, 10 and other dosage regimens may also be useful. Preferably, a compound of the invention is administered in an effective amount within the dosage range of about 0.1 to about 100 mg/kg, preferably about 0.5 to about 50 mg/kg and more preferably about 1 to about 20 mg/kg on a regimen in a single or 2 to 4 divided daily doses and/or continuous infusion.
- 15 A compound of the invention, alone or as part of a pharmaceutical composition, for administration may be sterilized prior to administration. Sterility may be readily accomplished by filtration through sterile membranes such as 0.2 micron membranes, or by other conventional methods. A compound of the invention, alone or as part of a pharmaceutical composition, typically may be stored in lyophilized form or as an aqueous solution. The pH typically will range between about 3-11, more preferably, 20 between about 5-9, and most preferably, between about 7-8. It is understood that use of certain excipients, carriers, or stabilizers, as described herein, may result in the formation of cyclic polypeptide salts.

- It should be understood that the foregoing discussion merely presents a detailed 25 description of certain preferred embodiments. It will be apparent to those of ordinary skill in the art that various modifications and equivalents can be made without departing from the spirit and scope of the invention. All the patents, journal articles and other documents discussed or cited above are herein incorporated by reference.

WHAT IS CLAIMED IS:

1. A compound of formula I:



5

wherein:

E is a C₃₋₁₆ carbocyclic ring structure or a three to ten membered heterocyclic monocyclic or bicyclic ring structure system containing 1-4 heteroatoms selected from N, O and S, substituted with 0 to 4 R groups independently selected from the group consisting of H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -N(R')² and a substituent member,

- 10 10 wherein said substituent member is selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group and a C₃₋₁₂cycloalkyl group containing linear or branched
15 15 chained portions, and

wherein said substituent member contains 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)-, and -S(=O)₂-; and

wherein for each of said substituent member:

- 20 20 (a) two hydrogens on the same carbon atom of said alkyl, alkenyl, alkinyl or cycloalkyl substituent member are replaced with =O or =N(R'');
 (b) one or more hydrogens, independently, on said alkyl, alkenyl, alkinyl or cycloalkyl substituent member or on the -NH- chain bridging groups are replaced by R''; or
 25 25 (c) one or more hydrogens, independently, on carbon atom(s) of said alkyl, alkenyl, alkinyl or cycloalkyl substituent member, on said -NH- chain bridging group or on R', R'', R''' or R^{IV} are replaced to form an intracyclic bond resulting in a C₃₋₁₂carbocyclic ring structure or a three to seven membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

30

R', R'', R''' and R^{IV} are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂,

- $-\text{CH}_2\text{O}_{0-12}\text{-CHO}$, $-\text{C}_{1-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-N(R}^{\text{a}}\text{)(R}^{\text{b}}\text{)}$, $-\text{C}_{0-12}\text{alkyl}$, $-(\text{CH}_2)_{0-12}\text{-CH}=\text{CH}$
 $0-1\text{-}(\text{CH}_2)_{0-12}(\text{CH}_3)_{0-1}\text{-O-C}_{1-12}\text{alkyl-N(R}^{\text{a}}\text{)(R}^{\text{b}}\text{)}$, $-\text{C}_{0-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-O-C}_{1-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-O-C}_{2-12}\text{alkenyl}$, $-\text{C}_{2-12}\text{alkenyl-O-C}_{1-12}\text{alkyl}$, $-\text{C}_{2-12}\text{alkinyl}$, $-\text{C}_{0-12}\text{alkyl-O-C}_{1-6}\text{alkinyl}$, $-\text{C}_{0-12}\text{alkinyl-O-C}_{0-12}\text{alkyl}$, $-\text{C}_{6-10}\text{aryl}$, $-\text{C}_{0-12}\text{alkyl-O-C}_{6-10}\text{aryl}$, $-\text{S}(=\text{O})_0$.

$5 \quad -\text{C}_{1-12}\text{alkyl-N(R}^{\text{a}}\text{)(R}^{\text{b}}\text{)}_0\text{-C}_{0-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{1-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-S}(=\text{O})_0$.
 $2\text{-C}_{2-12}\text{alkenyl}$, $-\text{C}_{2-12}\text{alkenyl-S}(=\text{O})_{0-2}\text{-C}_{1-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{1-6}\text{alkinyl}$, $-\text{C}_{0-12}\text{alkinyl-S}(=\text{O})_{0-2}\text{-C}_{0-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{6-10}\text{aryl}$, $-\text{C}_{0-12}\text{alkyl-C}_{6-10}\text{aryl}$, $-\text{C}_{2-12}\text{alkinyl-C}_{6-10}\text{aryl}$, $-\text{COOH}$, $-\text{C}_{0-12}\text{alkyl-COO-C}_{1-12}\text{alkyl}$, $-\text{C}_{0-12}\text{alkyl-COO-C}_{2-12}\text{alkenyl}$, $-\text{C}_{0-12}\text{alkyl-COO-C}_{2-12}\text{alkinyl}$,

$10 \quad -\text{C}_{2-12}\text{alkenyl-COO-C}_{1-12}\text{alkyl}$, $-\text{C}_{2-12}\text{alkinyl-COO-C}_{1-12}\text{alkyl}$, $-\text{C}_{2-12}\text{alkenyl-COO-C}_{1-12}\text{alkyl}$, $-\text{C}_{2-12}\text{alkenyl-COO-C}_{1-12}\text{alkyl}$, $-\text{C}_{6-10}\text{aryl}$ monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S;

$15 \quad \text{R}^{\text{a}}$ and R^{b} are independently selected from the group consisting of H, -CN, $-\text{C}_{0-6}\text{alkyl-SH}$, $-\text{C}_{0-6}\text{alkyl-OH}$, $-\text{C}_{0-6}\text{alkyl-CHO}$, $-\text{C}_{0-6}\text{alkyl-COOH}$, $-\text{C}_{0-6}\text{alkyl-NR'R''}$, $-\text{C}_{0-6}\text{alkenyl-SH}$, $-\text{C}_{0-6}\text{alkenyl-OH}$, $-\text{C}_{0-6}\text{alkenyl-CHO}$, $-\text{C}_{0-6}\text{alkenyl-COOH}$, $-\text{C}_{0-6}\text{alkenyl-NR'R''}$, $-\text{C}_{0-6}\text{alkinyl-SH}$, $-\text{C}_{0-6}\text{alkinyl-OH}$, $-\text{C}_{0-6}\text{alkinyl-CHO}$, $-\text{C}_{0-6}\text{alkinyl-COOH}$, $-\text{C}_{0-6}\text{alkinyl-NR'R''}$, $-\text{C}_{1-6}\text{alkyl}$, $-(\text{CH}_2)_{1-6}\text{Cl}$, $-(\text{CH}_2)_{1-6}\text{F}$, $-\text{CH}_2\text{Br}$, $-(\text{CH}_2)_{1-6}\text{I}$, $-(\text{CF}_3)_3$, $-(\text{CH}_2)_{1-6}(\text{CF}_3)$, $-(\text{CH}_2)_{1-6}\text{CN}$, $-(\text{CH}_2)_{0-6}\text{NO}_2$, $-\text{C}_{1-6}\text{alkyl}$, $-(\text{CH}_2)_{0-6}\text{CH}=(\text{CH})_{0-1}(\text{CH}_2)_{0-6}(\text{CH}_3)_{0-1}$, $-\text{C}_{0-6}\text{alkyl-O-C}_{1-6}\text{alkyl}$, $-\text{C}_{0-6}\text{alkyl-O-C}_{2-6}\text{alkenyl}$, $-\text{C}_{2-6}\text{alkenyl-O-C}_{1-6}\text{alkyl}$, $-\text{C}_{2-6}\text{alkinyl}$, $-\text{C}_{0-6}\text{alkyl-O-C}_{2-6}\text{alkinyl}$, $-\text{C}_{2-6}\text{alkinyl-O-C}_{1-6}\text{alkyl}$, $-\text{C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-O-C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{1-6}\text{alkyl}$, $-\text{C}_{0-6}\text{alkyl-S}(=\text{O})_0$.

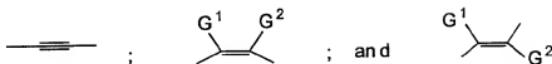
$20 \quad -\text{C}_{1-6}\text{alkinyl}$, $-\text{C}_{2-6}\text{alkinyl-S}(=\text{O})_{0-2}\text{-C}_{1-6}\text{alkyl}$, $-\text{C}_{0-6}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-C}_{6-10}\text{aryl}$, $-\text{C}_{2-6}\text{alkenyl-C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-COO-C}_{2-6}\text{alkenyl}$, $-\text{C}_{0-6}\text{alkyl-COO-C}_{2-6}\text{alkinyl}$, $-\text{C}_{2-6}\text{alkenyl-COO-C}_{1-6}\text{alkyl}$, $-\text{C}_{2-6}\text{alkenyl-COO-C}_{1-6}\text{alkyl}$, $-\text{C}_{2-6}\text{alkinyl-COO-C}_{1-6}\text{alkyl}$, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S, and R^{a} and R^{b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein said alkyl, alkenyl, and alkinyl portions of said R^{a} and said R^{b} are linear or branched and substituted with 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, and where R' and R'' are as defined above;

$25 \quad -\text{C}_{1-6}\text{alkinyl}$, $-\text{C}_{2-6}\text{alkinyl-S}(=\text{O})_{0-2}\text{-C}_{1-6}\text{alkyl}$, $-\text{C}_{0-6}\text{alkyl-S}(=\text{O})_{0-2}\text{-C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-C}_{6-10}\text{aryl}$, $-\text{C}_{2-6}\text{alkenyl-C}_{6-10}\text{aryl}$, $-\text{C}_{0-6}\text{alkyl-COO-C}_{1-6}\text{alkyl}$, $-\text{C}_{0-6}\text{alkyl-COO-C}_{2-6}\text{alkenyl}$, $-\text{C}_{0-6}\text{alkyl-COO-C}_{2-6}\text{alkinyl}$, $-\text{C}_{2-6}\text{alkenyl-COO-C}_{1-6}\text{alkyl}$, $-\text{C}_{2-6}\text{alkenyl-COO-C}_{1-6}\text{alkyl}$, $-\text{C}_{2-6}\text{alkinyl-COO-C}_{1-6}\text{alkyl}$, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S, and R^{a} and R^{b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein said alkyl, alkenyl, and alkinyl portions of said R^{a} and said R^{b} are linear or branched and substituted with 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, and where R' and R'' are as defined above;

$30 \quad$ heteroatoms selected from N, O, and S, and R^{a} and R^{b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein said alkyl, alkenyl, and alkinyl portions of said R^{a} and said R^{b} are linear or branched and substituted with 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, and where R' and R'' are as defined above;

$35 \quad$ heteroatoms selected from N, O, and S, and R^{a} and R^{b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein said alkyl, alkenyl, and alkinyl portions of said R^{a} and said R^{b} are linear or branched and substituted with 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, and where R' and R'' are as defined above;

Q is a selected from the group consisting of:



wherein G¹ and G² are independently selected from the group consisting of H, -(CH₂)_r-R¹-(J¹)₀₋₁, -CH=CH-R¹-(J¹)₀₋₁,



5 -(CH₂)_r-X-(CH₂)_t-R¹-(J¹)₀₋₁, and -X-(CH₂)_r-R¹-(J¹)₀₋₁;

X is selected from the group consisting of -N(R²)-, -P(=O)(-OR³)(-O-), -O-, -C(=O)-, -S-, -SO-, and -SO₂;

10 r and t are independently an integer from 0-12;

R¹ is independently selected from the group consisting of a C₃₋₁₆ carbocyclic ring structure substituted with 0-4 R groups, as defined above, a three to ten membered 15 heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O, and S substituted with 0-4 R groups, as defined above, H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR¹R¹¹ and a substituent member,

20 wherein said substituent member is selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched chained portions, and

25 wherein said substituent member contains from 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-; and

wherein for said substituent member:

- 30 (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member are replaced with =O or =N(R¹¹);
 (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl

substituents members or on said -NH- chain bridging groups are independently replaced by an R^{iv} substituent; and

- (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on said -NH- chain bridging group 5 or on the Rⁱ, Rⁱⁱ, Rⁱⁱⁱ or R^{iv} are replaced to form an intracyclic bond resulting in a C₃₋₁₂ carbocyclic ring structure or a three to seven membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S;

- Rⁱ, Rⁱⁱ, Rⁱⁱⁱ and R^{iv} are independently selected from the group consisting of H, 10 -CH₂₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{ia})(R^{ib}), -C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH, 15 0.1-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{ia})(R^{ib}), -C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, 15 -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₆, 20 -C₁₋₆alkyl-L(N(R^{ia}))(R^{ib}), -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₆, -C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl[C₆₋₁₀aryl], -C₂₋₁₂alkinyl[C₆₋₁₀aryl], -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, 25 -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, and a three to ten membered heterocyclic monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing at least 1-4 heteroatoms selected from N, O, and S;
- R^{ia} and R^{ib} are independently selected from the group consisting of H, -CN, 30 -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NRⁱRⁱⁱ, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NRⁱRⁱⁱ, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, 35 -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NRⁱRⁱⁱ, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl, -(CH₂)₁₋₆-F, -(CH₂)₁₋₆-Br, -(CH₂)₁₋₆-I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆-CN, -(CH₂)₁₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₁₋₆-CH=CH, -(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, -C₀₋₅alkyl-O-C₂₋₄alkenyl, -C₂₋₄alkenyl-O-C₁₋₆alkyl, -C₂₋₄alkenyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₄alkyl-S(=O)₀₋₂C₁₋₆alkyl, 40 -C₀₋₆alkyl-S(=O)₀₋₂C₄₋₆alkenyl, -C₂₋₄alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₄alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₂₋₄alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₄alkyl-C₆₋₁₀aryl, -C₂₋₄alkenyl[C₆₋₁₀aryl], -C₂₋₄alkinyl[C₆₋₁₀aryl], -C₀₋₄alkyl-COO-C₁₋₆alkyl,

- C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
 -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a
 three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4
 5 heteroatoms selected from N, O, and S, and R^{1a} and R^{1b} taken together or with a carbon
 atom having a free hydrogen to form an intracyclic bond resulting in a three to ten
 membered heterocyclic ring having from 1-4 heteroatoms selected from N, O, and S,
 wherein the alkyl, alkenyl, and alkinyl portions of said R^{1a} and said R^{1b} are linear or
 branched and substituted with from 0-6 members independently selected from the
 group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂, and -COOH, where R^{1a}
 10 and R^{1b} are as defined above;

- R² is selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH,
 -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{2a}R^{2b}, -C₀₋₆alkenyl-SH,
 -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{2a}R^{2b},
 15 -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH,
 -C₀₋₆alkinyl-NR^{2a}R^{2b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I,
 -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl,
 -(CH₂)₀₋₄-CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, -C₀₋₅alkyl-O-C₂₋₆alkenyl,
 -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₆alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl,
 20 -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
 -C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkinyl,
 -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₆alkyl-C₆₋₁₀aryl,
 -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₂₋₆alkinyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
 -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
 25 -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a
 three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4
 heteroatoms selected from N, O, and S, and R² taken with a carbon atom having a free
 hydrogen may form an intracyclic bond resulting in a three to ten membered
 heterocyclic ring having from 1-4 heteroatoms selected from N, O, and S, wherein the
 30 alkyl, alkenyl, and alkinyl portions of said R² are linear or branched and substituted
 with from 0-6 members independently selected from the group consisting of -I, -F, -Br,
 -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

- R^{2a} and R^{2b} are independently selected from the group consisting of H,
 35 -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F, -(CH₂)₀₋₁₂Br,
 -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂CN, -(CH₂)₀₋₁₂NO₂,
 -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{2a})(R^{2b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂CH=(CH)

- ₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{2a})(R^{2b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₁-C₁₋₁₂alkyl-N(R^{2a})(R^{2b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkenyl, -C₀₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkinyl, -C₀₋₁₂alkinyl-C₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

- R^{2a} and R^{2b} are independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR²R^{2a}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR²R^{2a}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR²R^{2a}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₃)₁₋₃, -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=(CH)(CH₂)₀₋₁(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R^{2a} and R^{2b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein the alkyl, alkenyl, and alkinyl portions of said R^{2a} and said R^{2b} are linear or branched and substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, where R^{2a} and R^{2b} are as defined above;

R³ is selected from the group consisting of H, -CHO, -COOH, and

a substituent member,

wherein said substituent member is selected from the group consisting of a linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group having straight or branched 5 chained portions,

wherein said substituent member contains 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and 10 -S(=O)₂;

wherein for each of said substituent member:

- (a) two hydrogens on the same carbon atom of said substituent member are replaced with =O or =N(R³);
- 15 (b) one or more hydrogens on said substituent member or on said -NH- chain bridging groups are independently replaced by an R³ⁿ substituent; and
- (c) one or more hydrogens independently on carbon atom(s) of said substituent member, on said -NH- chain bridging group or on R³ or R³ⁿ are replaced to form an intracyclic bond resulting in a C₃₋₁₂carbocyclic ring structure or a three to seven 20 membered heterocyclic ring containing from 1-4 heteroatoms selected from N, O and S;

R³ and R³ⁿ are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂-CN, 25 -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH) ₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂, 30 -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkinyl, -C₀₋₁₂alkinyl-C₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-35 C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^{3a} and R^{3b} are each independently selected from the group consisting of H,

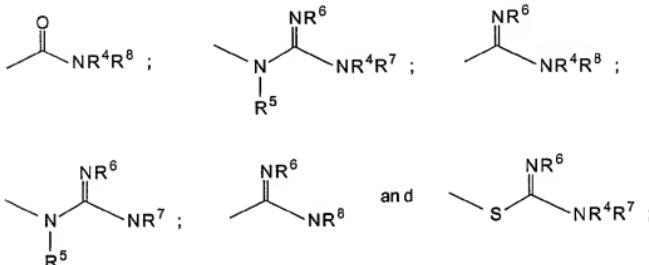
- CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,
 -C₀₋₆alkyl-NR^{3a}R^{3b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,
 5 -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{3a}R^{3b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
 -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{3a}R^{3b}, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl,
 -(CH₂)₁₋₆-F, -(CH₂)₁₋₆-Br, -(CH₂)₁₋₆-I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆-(CF₃), -(CH₂)₁₋₆-CN,
 -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
 10 -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,
 -C₀₋₄alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)O₀₋₂
 15 -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl,
 -C₀₋₄alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
 -C₀₋₄alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
 20 -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a
 three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4
 heteroatoms selected from N, O and S, and R^{3a} and R^{3b} may be taken together or with a
 carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to
 ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
 wherein the alkyl, alkenyl, and alkinyl portions of said R^{3a} and said R^{3b} are linear or
 branched and substituted with 0-6 members independently selected from the group
 consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

R^{3m} and R^{3n} are each a member independently selected from the group

- 25 consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, 30 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^{3a})(R^{3b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, 35 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure,

and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, where R^{3a} and R^{3b} are as defined above;

5 J¹ is independently selected from the group consisting of H, -CN, -NR⁹R¹⁰,



10 where R⁴, R⁵, R⁶, R⁹ and R¹⁰ are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, 15 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH, 20 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

25 alternatively, R⁹ and R¹⁰ taken together form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected

from N, O and S;

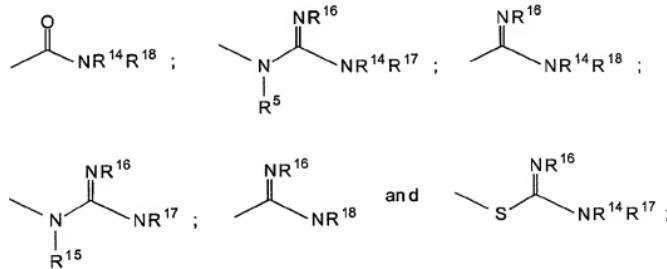
R^a and R^b are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-N R^cR^d, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-N R^cR^d, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-N R^cR^d, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=CH(CH₀₋₁)(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R^a and R^b taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of said R^a and R^b may be linear or branched and substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

R^a and R^d are independently selected from the group consisting of H, C₁₋₆alkyl-CHO, C₀₋₆alkyl-COOH, C₀₋₆alkyl-COCl, C₀₋₆alkyl-COI, C₀₋₆alkyl-COF, C₀₋₆alkyl-COB_r, C₀₋₆alkyl-COO-C₁₋₆alkyl, C₁₋₆alkyl-COO-C₂₋₆alkenyl, C₁₋₆alkyl-COO-C₂₋₆alkinyl, C₀₋₆alkyl-COO-C₀₋₆alkyl-CF₃, C₁₋₆alkyl-COO-C₆₋₁₀aryl-COOH, C₀₋₆alkyl-CN, C₁₋₆alkyl-NO₂, C₁₋₆alkyl-Cl, C₁₋₆alkyl-Br, C₁₋₆alkyl-I, C₁₋₆alkyl-F, C₀₋₆alkyl-CF₃, C₁₋₆alkyl-CF₂-CF₃, C₁₋₆alkyl-SH, C₁₋₆alkyl, C₁₋₆alkenyl, C₁₋₆alkynyl, C₁₋₆alkyloxy, C₁₋₆alkenyoxy, C₁₋₆alkylthio, C₁₋₆alkenylthio, C₃₋₄cycloalkyl, C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, a three to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S; and C₁₋₆alkylheterocyclic monocyclic or bicyclic ring system having in the ring system 3 to 10 atoms with 1-4 of such atoms being selected from N, O and S;

R^7 and R^8 are independently selected from the group consisting of H,

- $-(\text{CH}_2)_{0-12}\text{-SH}$, $-(\text{CH}_2)_{0-12}\text{-OH}$, $-(\text{CH}_2)_{0-12}\text{-NH}_2$, $-(\text{CH}_2)_{0-12}\text{-Cl}$, $-(\text{CH}_2)_{0-12}\text{-F}$, $-(\text{CH}_2)_{0-12}\text{-Br}$,
 $-(\text{CH}_2)_{0-12}\text{-I}$, $-(\text{CF}_2)_{1-5}(\text{CF}_3)$, $-(\text{CH}_2)_{0-12}(\text{CF}_3)$, $-(\text{CH}_2)_{0-12}\text{-CN}$, $-(\text{CH}_2)_{0-12}\text{-NO}_2$,
 $-(\text{CH}_2)_{0-12}\text{-CHO}$, $\text{-C}_{1-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-N(R''')(R''')}_0\text{-C}_{0-12}\text{alkyl}$, $-(\text{CH}_2)_{0-12}\text{-CH}=\text{CH}$
 $_{0-1}(\text{CH}_2)_{0-12}(\text{CH}_3)_{0-1}$, $\text{-O-C}_{1-12}\text{alkyl-N(R''')(R''')}_0\text{-C}_{0-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-O-C}_{1-12}\text{alkyl}$, -C_{0-12}
5 $\text{alkyl-O-C}_{2-12}\text{alkenyl}$, $\text{-C}_{2-12}\text{alkenyl-O-C}_{1-12}\text{alkyl}$, $\text{-C}_{2-12}\text{alkinyl}$, $\text{-C}_{0-12}\text{alkyl-O-C}_{1-6}\text{alkinyl}$,
 $\text{-C}_{0-12}\text{alkinyl-O-C}_{0-12}\text{alkyl}$, $\text{-C}_{6-10}\text{aryl}$, $\text{-C}_{0-12}\text{alkyl-O-C}_{6-10}\text{aryl}$, -S(=O)_0 ,
 $\text{-C}_{1-12}\text{alkyl-N(R''')(R''')}_0\text{-C}_{0-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-S(=O)}_{0-2}\text{-C}_{1-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-S(=O)}_0$,
 $\text{-C}_{2-12}\text{alkenyl}$, $\text{-C}_{2-12}\text{alkenyl-S(=O)}_{0-2}\text{-C}_{1-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-S(=O)}_{0-2}\text{-C}_{1-6}\text{alkinyl}$, -C_{0-12}
 $\text{alkinyl-S(=O)}_{0-2}\text{-C}_{0-12}\text{alkyl}$, $\text{-C}_{0-12}\text{alkyl-S(=O)}_{0-2}\text{-C}_{6-10}\text{aryl}$, $\text{-C}_{0-12}\text{alkyl-C}_{6-10}\text{aryl}$,
10 $\text{-C}_{2-12}\text{alkenyl-C}_{6-10}\text{aryl}$, $\text{-C}_{2-12}\text{alkenyl-C}_{6-10}\text{aryl}$, -COOH , $\text{-C}_{0-12}\text{alkyl-COO-C}_{1-12}\text{alkyl}$,
 $\text{-C}_{0-12}\text{alkyl-COO-C}_{2-12}\text{alkenyl}$, $\text{-C}_{0-12}\text{alkyl-COO-C}_{2-12}\text{alkinyl}$, $\text{-C}_{2-12}\text{alkenyl-COO-}$
 $\text{C}_{1-12}\text{alkyl}$, $\text{-C}_{2-12}\text{alkinyl-COO-C}_{1-12}\text{alkyl}$, $\text{-C}_{2-12}\text{alkenyl-COO-C}_{1-12}\text{alkyl}$,
 $\text{-C}_{2-12}\text{alkinyl-COO-C}_{1-12}\text{alkyl}$, $\text{-C}_{6-10}\text{aryl}$ monocyclic or bicyclic ring structure, and a
15 three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure
containing 1-4 heteroatoms selected from the group N, O and S, wherein R^a, R^b, R^c
and R^d are each as defined above;

20



- R¹¹ is a member independently selected from the group consisting of a C₃₋₁₂ carbocyclic ring structure substituted with 0 to 4 R groups, as defined above, a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure
25 containing 1-4 heteroatoms substituted with 0 to 4 R groups, as defined above, H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR¹¹R¹¹, and a substituent member, wherein said substituent member is selected from the group consisting of a

linear or branched C₁₋₁₂alkyl group, a linear or branched C₂₋₁₂alkenyl group, a linear or branched C₂₋₁₂alkinyl group, and a C₃₋₁₂cycloalkyl group which may have straight or branched chained portions,

5 wherein said substituent member contains from 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-;

wherein for each said substituent member:

- 10 (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member are replaced with a member selected from the group consisting of =O and =N(R^{11m});
- (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl substituents members or on said -NH- chain bridging groups are independently replaced
15 by an R^{11iv} substituent; and
- (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on said -NH- chain bridging group or on R¹¹ⁱ, R¹¹ⁱⁱ, R^{11m} or R^{11iv} are replaced to form an intracyclic bond resulting in a C₃₋₁₂carbocyclic ring structure or a three to seven membered heterocyclic ring
20 containing 1-4 heteroatoms selected from N, O and S;

R¹¹ⁱ, R¹¹ⁱⁱ, R^{11m} and R^{11iv} are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN,
25 -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁-C₀₋₁₂alkyl,
-C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
-C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₆₋₁₀alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R^{11a})(R^{11b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂.
30 -C₂₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
-C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl,
-C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-
35 C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

- R^{11a} and R^{11b} are independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{11a}R^{11b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH,
- 5 -C₀₋₆alkenyl-NR^{11a}R^{11b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{11a}R^{11b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₃-(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₁₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₃alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
- 10 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R^{11a} and R^{11b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
- 15 20 wherein the alkyl, alkenyl, and alkinyl portions of said R^{11a} and said R^{11b} are linear or branched and substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

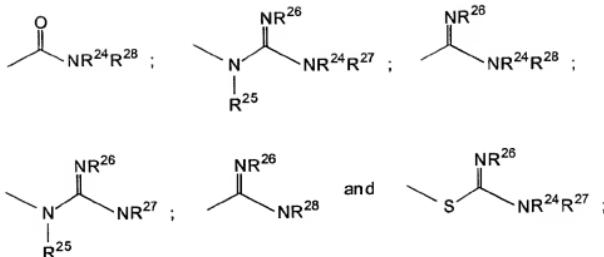
- R¹², R¹³, R¹⁴, R¹⁵, and R¹⁶ are independently selected from the group consisting of H, -(CH₂)₀₋₁₂SH, -(CH₂)₀₋₁₂OH, -(CH₂)₀₋₁₂NH₂, -(CH₂)₀₋₁₂Cl, -(CH₂)₀₋₁₂F, -(CH₂)₀₋₁₂Br, -(CH₂)₀₋₁₂I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂CN, -(CH₂)₀₋₁₂NO₂, -(CH₂)₀₋₁₂CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R¹⁰)(R¹⁰)₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R¹⁰)(R¹⁰)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
- 25 30 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl-N(R¹⁰)(R¹⁰)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkinyl, -C₂₋₁₂alkinyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
- 35 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure,

and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, wherein R^a, R^b, R^c and R^d are each as defined above;

- 5 alternatively, R¹² and R¹³ taken together form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S;

- R¹⁷ and R¹⁸ are independently selected from the group consisting H,
 10 - (CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br,
 - (CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂,
 -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁, -C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkinyl,
 15 -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₁₋₁₂alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl,
 20 -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, wherein R^a, R^b, R^c and R^d are each as defined above;

25 J is a member independently selected from the group consisting of H, -CN, -R²³, -NR²⁹R³⁰,



- R^{23} is selected from the group consisting of a C_{3-16} carbocyclic ring structure which may be substituted by up to 4 R groups, as defined above, a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure which may be substituted by up to 4 R groups, as defined above, H, -SH, -OH, -Cl, -F, -Br, -I, -CN, -NO₂, -CHO, -COOH, -NR^{23iv}R^{23v}, and a substituent member,
- 5 wherein said substituent member is selected from the group consisting of a linear or branched C_{1-12} alkyl group, a linear or branched C_{2-12} alkenyl group, a linear or branched C_{2-12} alkinyl group, and a C_{3-12} cycloalkyl group which may have straight or branched chained portions,
- 10 wherein said substituent member contains 0 to 4 chain bridging groups independently selected from the group consisting of -NH-, -O-, -S-, -S(=O)- and -S(=O)₂-; and
- 15 wherein for each said substituent member:
- (a) two hydrogens on the same carbon atom of the alkyl, alkenyl, alkinyl or cycloalkyl substituent member are replaced with =O or =N(R^{23vi});
- (b) one or more hydrogens on the alkyl, alkenyl, alkinyl and cycloalkyl substituents members or on said -NH- chain bridging groups are independently replaced by an R^{23iv} substituent; or
- 20 (c) one or more hydrogens independently on carbon atom(s) of the alkyl, alkenyl, alkinyl and cycloalkyl substituent members, on said -NH- chain bridging group or on R^{23i} , R^{23ii} , R^{23iii} or R^{23iv} are replaced to form an intracyclic bond resulting in a

C_{3-12} carbocyclic ring structure or a three to seven membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

- R^{23t} , R^{23m} and R^{23iv} are each a member independently selected from the group consisting of H, -(CH_2)₀₋₁₂-SH, -(CH_2)₀₋₁₂-OH, -(CH_2)₀₋₁₂-NH₂, -(CH_2)₀₋₁₂-Cl, -(CH_2)₀₋₁₂-F, -(CH_2)₀₋₁₂-Br, -(CH_2)₀₋₁₂-I, -(CF_3)₁₋₅-(CF_3), -(CH_2)₀₋₁₂-(CF_3), -(CH_2)₀₋₁₂-CN, -(CH_2)₀₋₁₂-NO₂, -(CH_2)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{23a})(R^{23b})₀₋₁-C₀₋₁₂alkyl, -(CH_2)₀₋₁₂-CH=CH-(CH)₀₋₁-(CH_2)₀₋₁₂(CH_3)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{23a})(R^{23b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl,
- 10 -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(O)₀₋₂-C₁₋₁₂alkyl-N(R^{23a})(R^{23b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(O)=O₀₋₂-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-S(O)=O₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(O)=O₀₋₂-C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkinyl-C₆₋₁₀aryl, -COOH,
- 15 -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms, selected from N, O and S, where R^{23t} and R^{23m} are 20 as defined above;

- R^{23a} and R^{23b} are independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR²³R^{23m}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, 25 -C₀₋₆alkenyl-NR²³R^{23b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR²³R^{23m}, -C₁₋₆alkyl, -(CH_2)₁₋₆-Cl, -(CH_2)₁₋₆-F, -(CH_2)₁₋₆-Br, -(CH_2)₁₋₆-I, -(CF_3)₁₋₃, -(CH_2)₁₋₆-(CF_3), -(CH_2)₁₋₆-CN, -(CH_2)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH_2)₀₋₄-CH=CH-(CH)₀₋₁-(CH_2)₀₋₄(CH_3)₀₋₁, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₂₋₆alkinyl, 30 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(O)₀₋₂-C₂₋₆alkenyl, -C₂₋₆alkenyl-S(O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(O)₀₋₂-C₆₋₁₀aryl, -C₂₋₆alkenyl-C₆₋₁₀aryl, -C₂₋₆alkinyl-C₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, a 35 three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R^{23a} and R^{23b} taken together or with a carbon

- atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein the alkyl, alkenyl, and alkinyl portions of said R^{23a} and said R^{23b} are linear or branched and substituted with from 0-6 members independently selected from the
- 5 group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;
- R²⁴, R²⁵, R²⁶, R²⁹ and R³⁰ are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN,
- 10 -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂,
- 15 -z-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-
- 20 C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, wherein R^a, R^b, R^c and R^d are each as defined above;
- 25 alternatively, R²⁹ and R³⁰ taken together form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S;

- R²⁷ and R²⁸ are independently selected from the group consisting H,
- 30 -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₂)₁₋₅-(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^a)(R^b)₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₁₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl,
- 35 -C₀₋₁₂alkinyl-O-C₁₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂z-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl,

- ₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl-, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkylC₆₋₁₀aryl,
 -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl,
 -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-
 C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl,
- 5 -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a
 three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure
 containing 1-4 heteroatoms selected from N, O and S, wherein R^a, R^b, R^c and R^d are
 each as defined above;
- 10 A and T are independently a ring structure which is selected from the group
 consisting of a C₃₋₁₆carbocyclic ring structure, a three to ten membered heterocyclic
 monocyclic or bicyclic ring structure system containing 1-4 heteroatoms selected from
 N, O and S, and a C₄-alkylheterocyclic monocyclic or bicyclic ring system having in
 the ring system 3 to 10 atoms with 1-4 of such atoms being selected from N, O and S,
 15 wherein each of said carbocyclic and heterocyclic ring structures may be substituted
 with 0 to 4 R groups, as defined above, with the proviso that one of A and T can be
 absent and that when both A and T are present they can be directly attached to one
 another by a direct bond or can be attached indirectly by a bridging group which is
 bonded to each of A and T, wherein said bridging group is selected from the group
 20 consisting of -C₄alkylene-, -(CH₂)₀₋₆O-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁴)-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆C(=N(R³⁴))-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-O-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆O-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-N(R³⁴)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁴)-
 C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-N(R³⁴)-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆N(R³⁴)-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁴)-C(=O)-N(R³⁵)-(CH₂)₀₋₆-,
 25 -(CH₂)₀₋₆S-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-(CH₂)₀₋₆-,
 -(CH₂)₀₋₆S(O)₂N(R³⁴)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁴)-SO₂-(CH₂)₀₋₆, and
 -(CH₂)₀₋₆N(R³⁴)-SO₂N(R³⁵)-(CH₂)₀₋₆;

R³⁴ and R³⁵ are each a member independently selected from the group consisting
 30 of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,
 -C₀₋₆alkyl-NR²¹, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,
 -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR³⁴R³⁴ⁿ, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
 -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR³⁴R³⁴ⁿ, -C₁₋₆alkyl, -(CH₂)₁₋₅Cl,
 -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₃)₂, -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN,
 35 -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)=O(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
 -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
 -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,

- C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀,
 - ²C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl,
 - C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
 - ⁵ -C₀₋₆alkyl-COO-C₂₋₆alkenyl, C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R³⁴ and R³⁵ taken together or with a carbon atom having a free hydrogen forms an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
 - ¹⁰ wherein the alkyl, alkenyl, and alkinyl portions of each of R³⁴ and R³⁵ may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;
- R^{34a} and R^{34b} are independently selected from the group consisting of H,
- ¹⁵ -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br,
 - (CH₂)₀₋₁₂-I, -(CF₂)₁₋₅(CF₃), -(CH₂)₀₋₁₂(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂,
 - (CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{34b})(R^{34b})₀₋₁C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=CH(=CH)
 - ²⁰ ₀₋₁(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl-N(R^{34b})(R^{34b})₀₋₁C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl,
 - ²⁵ -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀,
 - ²C₁₋₁₂alkyl-N(R^{34b})(R^{34b})₀₋₁C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀,
 - ²C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl,
 - ³⁰ -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl,
 - C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl,
 - C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl,
 - C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;
- R^{34a} and R^{34b} are each independently selected from the group consisting of H,
- CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH,
 - C₀₋₆alkyl-NR³⁴R³⁴, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO,
 - C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR³⁴R³⁴, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
 - ³⁵ -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR³⁴R³⁴, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl,
 - (CH₂)₁₋₆-F, -(CH₂)₁₋₆-Br, -(CH₂)₁₋₆-I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆-CN,
 - (CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=(CH)₀₋₁(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,

- C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
- C₂₋₄alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,
- C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
- ⁵ -C₁₋₄alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl,
- C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
- C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
- C₂₋₄alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a
three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4
10 heteroatoms selected from N, O and S, and R^{34a} and R^{34b} taken together or with a carbon
atom having a free hydrogen to form an intracyclic bond resulting in a three to ten
membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
wherein the alkyl, alkenyl, and alkinyl portions of said R^{34a} and said R^{34b} are linear or
15 branched and substituted with from 0-6 members independently selected from the
group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH, where R³⁴ⁱ
and R^{34j} are as defined above;

- Z is selected from the group consisting of a bond, -C₁₋₄alkylene-,
- (CH₂)₀₋₆O-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=N(R³⁶))-(CH₂)₀₋₆-,
 - ²⁰ -(CH₂)₀₋₆C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆C(=O)-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-C(=O)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆O-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆O-C(=O)-N(R³⁶)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆N(R³⁶)-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-C(=O)-N(R³⁷)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆S-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆S(O)₂-(CH₂)₀₋₆-,
 - ²⁵ -(CH₂)₀₋₆S(O)₂-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆N(R³⁶)-SO₂-(CH₂)₀₋₆-, and
 - (CH₂)₀₋₆N(R³⁶)-SO₂-N(R³⁷)-(CH₂)₀₋₆;

- R³⁶ and R³⁷ are independently selected from the group consisting of H, -CN,
-C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR³⁶R³⁶ⁱ,
- C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH,
 - ³⁰ -C₀₋₆alkenyl-NR³⁶R³⁶ⁱ, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO,
 - C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR³⁶R³⁶ⁱ, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F,
 - (CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂,
 - ³⁵ -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl,
 - C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl,
 - C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,
 - C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂
 - ⁴⁰ -C₁₋₆alkinyl, -C₂₋₄alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₆₋₁₀aryl,

- C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl,
- C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
- C₂₋₆alkinyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R³⁶ and R³⁷ taken together or with a carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein the alkyl, alkenyl, and alkinyl portions of said R³⁶ and said R³⁷ are linear or branched and substituted with 0-6 members independently selected from the group
- 5 consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;
- 10

R^{36a} and R^{36b} are independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₃)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂,

- 15 -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{36a})(R^{36b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁-(CH₂)₀₋₁₂(CH₃)₀₋₁₁, -O-C₁₋₁₂alkyl-N(R^{36a})(R^{36b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl, -C₀₋₁₂alkyl-O-C₁₋₆aryl, -S(=O)₀₋₂C₁₋₁₂alkyl-N(R^{36a})(R^{36b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₁₋₆alkinyl, -C₀₋₁₂alkinyl-S(=O)₀₋₂-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₆₋₁₀aryl,
- 20 -C₀₋₁₂alkylC₆₋₁₀aryl, -C₂₋₁₂alkenylC₆₋₁₀aryl, -C₂₋₁₂alkinylC₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl-
- 25 COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^{36a} and R^{36b} are each independently selected from the group consisting of H,

- 30 -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR³⁶R^{36a}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR³⁶R^{36a}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH,
- C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR³⁶R^{36a}, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl, -(CH₂)₁₋₆-F, -(CH₂)₁₋₆-Br, -(CH₂)₁₋₆-I, -(CF₃)₁₋₃(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl,
- 35 -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl,

- C₀₋₆alkyl-S(=O)₀₋₂, C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl- S(=O)₀₋
- ₂-C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl,
- C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl- COO-C₁₋₆alkyl,
- C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl- COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl,
- 5 -C₂₋₆alkinyl- COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R^{36a} and R^{36b} taken together or with a carbon atom having a free hydrogen to form an intracyclic bond with a resulting three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
- 10 wherein the alkyl, alkenyl, and alkinyl portions of R^{36a} and R^{36b} may be linear or branched and may be substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

- M is selected from the group consisting of a bond, -C₁₋₆alkylene-,
- 15 -(CH₂)₀₋₆-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-O-C(=O)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆-C(=O)-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-C(=O)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆-O-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-O-C(=O)-N(R³⁸)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆-N(R³⁸)-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-C(=O)-N(R³⁹)-(CH₂)₀₋₆-,
 - 20 -(CH₂)₀₋₆-S-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O₂)-(CH₂)₀₋₆-,
 - (CH₂)₀₋₆-S(O)₂-N(R³⁸)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁸)-SO₂-(CH₂)₀₋₆-, and
 - (CH₂)₀₋₆-N(R³⁸)-SO₂- N(R³⁹)-(CH₂)₀₋₆;

- R³⁸ and R³⁹ are independently a member selected from the group consisting of
- 25 H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR³⁸R^{38a}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR³⁸R^{38a}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR³⁸R^{38a}, -C₁₋₆alkyl, -(CH₂)₁₋₆-Cl, -(CH₂)₁₋₆-F, -(CH₂)₁₋₆-Br, -(CH₂)₁₋₆-I, -(CF₃)₁₋₃, -(CH₃)₁₋₆-(CF₃), -(CH₃)₁₋₆-CN,
 - 30 -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₆alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂-C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkinyl, -C₁₋₆alkinyl, -C₂₋₆alkinyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl,
 - 35 -C₀₋₆alkylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkinylC₆₋₁₀aryl, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₆alkenyl, -C₀₋₆alkyl-COO-C₂₋₆alkinyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkinyl-COO-C₁₋₆alkyl, a

three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S, and R³⁸ and R³⁹ taken together or with a carbon atom having a free hydrogen forms an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, where the alkyl, alkenyl, and alkinyl portions of said R³⁸ and said R³⁹ are linear or branched and are substituted with 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH.

- 10 R³⁸ⁱ and R³⁸ⁱⁱ are each a member independently selected from the group consisting of H, -(CH₂)₀₋₁₂-SH, -(CH₂)₀₋₁₂-OH, -(CH₂)₀₋₁₂-NH₂, -(CH₂)₀₋₁₂-Cl, -(CH₂)₀₋₁₂-F, -(CH₂)₀₋₁₂-Br, -(CH₂)₀₋₁₂-I, -(CF₃)₁₋₅(CF₃), -(CH₂)₀₋₁₂-(CF₃), -(CH₂)₀₋₁₂-CN, -(CH₂)₀₋₁₂-NO₂, -(CH₂)₀₋₁₂-CHO, -C₁₋₁₂alkyl, -C₀₋₁₂alkyl-N(R^{38a})(R^{38b})₀₋₁-C₀₋₁₂alkyl, -(CH₂)₀₋₁₂-CH=(CH)₀₋₁(CH₂)₀₋₁₂(CH₃)₀₋₁, -O-C₁₋₁₂alkyl- N(R^{38a})(R^{38b})₀₋₁-C₀₋₁₂alkyl, 15 -C₀₋₁₂alkyl-O-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₁₂alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₆alkinyl, -C₀₋₁₂alkinyl-O-C₀₋₁₂alkyl, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₁₋₁₂alkyl- N(R^{38a})(R^{38b})₀₋₁-C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂ 20 C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₀₋₁₂alkinyl- S(=O)₀₋₂C₀₋₁₂alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₁₂alkyl-C₆₋₁₀aryl, -COOH, -C₀₋₁₂alkyl-COO-C₁₋₁₂alkyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-COO-C₂₋₁₂alkinyl, 25 -C₂₋₁₂alkenyl-COO-C₁₋₁₂alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₁₂alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S;

R^{38a} and R^{38b} are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-NR^{38a}R^{38b}, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, 30 -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-NR^{38a}R^{38b}, -C₀₋₆alkinyl-SH, -C₀₋₆alkinyl-OH, -C₀₋₆alkinyl-CHO, -C₀₋₆alkinyl-COOH, -C₀₋₆alkinyl-NR^{38a}R^{38b}, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₂)₁₋₃-(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆-NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄-CH=CH(CH₂)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₅alkyl-O-C₁₋₆alkyl, 35 -C₀₋₅alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkinyl, -C₀₋₅alkyl-O-C₂₋₆alkinyl, -C₂₋₆alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₀₋₄alkyl-O-C₆₋₁₀aryl, -C₀₋₆alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl, -C₀₋₆alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkinyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₆₋₁₀aryl.

- $-C_{0-6}alkylC_{6-10}aryl$, $-C_{2-6}alkenylC_{6-10}aryl$, $-C_{2-6}alkinylC_{6-10}aryl$, $-C_{0-6}alkyl-COO-C_{1-6}alkyl$,
 $-C_{0-6}alkyl-COO-C_{2-6}alkenyl$, $-C_{0-6}alkyl-COO-C_{2-6}alkinyl$, $-C_{2-6}alkenyl-COO-C_{1-6}alkyl$,
 $-C_{2-6}alkinyl-COO-C_{1-6}alkyl$, $-C_{2-6}alkenyl-COO-C_{1-6}alkyl$, $-C_{2-6}alkinyl-COO-C_{1-6}alkyl$, a
 three to ten membered monocyclic or bicyclic heterocyclic ring structure containing 1-4
 5 heteroatoms selected from N, O and S, and R^{38a} and R^{38b} taken together or with a
 carbon atom having a free hydrogen to form an intracyclic bond resulting in a three to
 ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S,
 where the alkyl, alkenyl, and alkinyl portions of R^{38a} and R^{38b} may be linear or branched
 and may be substituted with from 0-6 members independently selected from the group
 10 consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH,

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and
 prodrug derivatives thereof.

- 15 2. A compound of claim 1, wherein

X is selected from the group consisting of -N-, -O-, -C(=O)-, -S-, -SO-, and
 $-SO_2^-$;

- r and t are each independently an integer from 0-6; and
 R¹ is a member independently selected from the group consisting of H, -OH, halogen,
 20 trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl,
 -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl,
 -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, and -COO-C₁₋₆alkyl.

3. A compound of claim 1, wherein

- 25 E, A and T are independently selected from the group consisting of phenyl,
 naphthyl, biphenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, 1,2-pyrimidyl, 1,3-pyrimidyl,
 1,4-pyrimidyl, morpholinyl, thiomorpholinyl, piperidinyl, thiophenyl, oxazolyl,
 isoxazolyl, thiazolyl, isothiazolyl, imidazolyl and triazole, wherein are E, A, and T are
 30 each substituted with 0 to 4 R groups independently selected from the group consisting
 of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl,
 C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl,
 C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl, any two R groups
 taken together form a methylenedioxy or ethylenedioxy group, and any two R groups

taken together cyclize with a monocyclic heterocyclic group of E, A or T to form a bicyclic heterocyclic group.

4. A compound of claim 1, wherein Q is selected from the group consisting of:

5



X is selected from the group consisting of -N-, -O-, -C(=O)-, -S-, -SO-, and -SO₂-;

r and t are each independently an integer from 0-6;

10 R¹ is a member independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₈alkyl, C₃₋₈cycloalkyl, -O-C₁₋₄alkyl, C₁₋₄alkenyl, -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkyl|C₆₋₁₀aryl, -O-C₁₋₆alkyl|C₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl; and

15 E, A and T each contain 0-4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₈alkyl, C₃₋₈cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl, -O-C₁₋₆alkenyl, C₆₋₁₀aryl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkyl|C₆₋₁₀aryl, -O-C₁₋₆alkyl|C₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl, and any two R groups taken together form a methylenedioxy or ethylene dioxyl group.

20

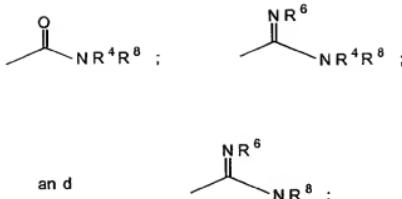
5. A compound of claim 1, wherein

Q is selected from the group consisting of:

25



J¹ is selected from the group consisting of H, -CN, -NR⁹R¹⁰,



- R^4 , R^6 , R^9 and R^{10} are independently selected from the group consisting of H, -(CH₂)₀₋₆SH, -(CH₂)₀₋₆OH, -(CH₂)₀₋₆NH₂, -(CH₂)₀₋₆Cl, -(CH₂)₀₋₆F, -(CH₂)₀₋₆Br, -(CH₂)₀₋₆I, -(CF₃)₁₋₅, -(CH₂)₀₋₆(CF₃), -(CH₂)₀₋₆CN, -(CH₂)₀₋₆-NO₂, -(CH₂)₀₋₆CHO, -C₁₋₆alkyl, -C₀₋₆alkyl-N(R¹⁰)(R^{b1}), -C₀₋₆alkyl, -(CH₂)₀₋₆-CH=(CH)₀₋₁-(CH₂)₀₋₆(CH₃)₀₋₁, -O-C₁₋₆alkyl-N(R¹⁰)(R^{b1}), -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₆alkyl, -C₂₋₁₂alkenyl, -C₀₋₁₂alkyl-O-C₁₋₆alkenyl, -C₀₋₁₂alkenyl-O-C₀₋₆alkyl, -C₀₋₁₂alkyl-, -C₆₋₁₀aryl, -C₀₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂-C₁₋₆alkyl-N(R¹⁰)(R^{b1}), -C₀₋₆alkyl, -C₀₋₆alkyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂-C₁₋₆alkyl, -C₀₋₁₂alkyl-S(=O)₀₋₂-C₀₋₆alkyl, -C₀₋₁₂alkenyl-C₆₋₁₀aryl, -C₀₋₆alkyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -COOH, -C₀₋₆alkyl-COO-C₁₋₆alkyl, -C₀₋₆alkyl-COO-C₂₋₁₂alkenyl, -C₀₋₆alkyl-COO-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure selected from the group consisting of phenyl and naphthyl, and a three to ten membered heterocyclic monocyclic or bicyclic heterocyclic ring structure selected from the group consisting of benzimidazolyl, benzofuranyl, benzothiofuranyl, benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzisoxazolyl, benzisothiazolyl, benzimidazaliny, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrafuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindoliny, isoindolyl, isoquinolinyl, isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl,

pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl, tetrahydroisoquinoliny, tetrahydroquinoliny, 6H-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl,
 5 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thienyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl;

R^a and R^b are each independently selected from the group consisting of H, -CN, -C₀₋₆alkyl-SH, -C₀₋₆alkyl-OH, -C₀₋₆alkyl-CHO, -C₀₋₆alkyl-COOH, -C₀₋₆alkyl-N R^aR^d, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH,
 10 -C₀₋₆alkenyl-N R^aR^d, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-N R^aR^d, -C₀₋₆alkenyl-SH, -C₀₋₆alkenyl-OH, -C₀₋₆alkenyl-CHO, -C₀₋₆alkenyl-COOH, -C₀₋₆alkenyl-N R^aR^d, -C₁₋₆alkyl, -(CH₂)₁₋₆Cl, -(CH₂)₁₋₆F, -(CH₂)₁₋₆Br, -(CH₂)₁₋₆I, -(CF₃)₁₋₃(CF₃), -(CH₂)₁₋₆(CF₃), -(CH₂)₁₋₆CN, -(CH₂)₀₋₆NO₂, -C₁₋₆alkyl, -(CH₂)₀₋₄CH=(CH)₀₋₁-(CH₂)₀₋₄(CH₃)₀₋₁, -C₀₋₆alkyl-O-C₁₋₆alkyl, -C₀₋₆alkyl-O-C₂₋₆alkenyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl, -C₀₋₆alkenyl-O-C₁₋₆alkyl, -C₂₋₆alkenyl-O-C₁₋₆alkyl, -C₀₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkenyl-S(=O)₀₋₂C₂₋₆alkenyl, -C₂₋₆alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₀₋₆alkenyl-S(=O)₀₋₂C₆₋₁₀aryl, -C₀₋₆alkenylC₆₋₁₀aryl, -C₂₋₆alkenylC₆₋₁₀aryl, -C₀₋₆alkenyl-COO-C₁₋₆alkyl, -C₀₋₆alkenyl-COO-C₂₋₆alkenyl, -C₀₋₆alkenyl-COO-C₂₋₆alkenyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, -C₂₋₆alkenyl-COO-C₁₋₆alkyl, and a three to ten membered monocyclic or bicyclic heterocyclic ring structure selected from the group consisting of benzimidazolyl, benzofuranyl, benzothiofuranyl, benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl,
 25 benzisoxazolyl, benzothiazolyl, benzimidazoliny, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinoliny, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindolinyl, isoindolyl, isoquinolinyl,
 30 isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinoliny, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazoliny, pyrazolidinyl, pyrazoliny,
 35 pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl,

- tetrahydroisoquinolinyl, tetrahydroquinolinyl, 6H-1,2,5-thiadiazinyl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thiényl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl, and R^a and R^b together or with a carbon atom having a free hydrogen forms an intracyclic bond resulting in a three to ten membered heterocyclic ring having from 1-4 heteroatoms selected from N, O and S, wherein the alkyl, alkenyl, and alkinyl portions of said R^a and said R^b are linear or branched and substituted with from 0-6 members independently selected from the group consisting of -I, -F, -Br, -OH, -NO₂, -CF₃, -CHO, -NH₂ and -COOH;

R^a and R^b are independently selected from the group consisting of H, C₁₋₆alkyl-CHO, C₆₋₈alkyl-COOH, C₆₋₈alkyl-COCl, C₆₋₈alkyl-COI, C₆₋₈alkyl-COF, C₆₋₈alkyl-COBr, C₆₋₈alkyl-COO-C₁₋₆alkyl, C₆₋₈alkyl-COO-C₂₋₆alkenyl, C₆₋₈alkyl-COO-C₂₋₆alkinyl, C₆₋₈alkyl-COO-C₆₋₈alkyl-CF₃, C₆₋₈alkyl-COO-C₆₋₁₀aryl-COOH, C₆₋₈alkyl-CN, C₆₋₈alkyl-NO₂, C₆₋₈alkyl-Cl, C₆₋₈alkyl-Br, C₆₋₈alkyl-I, C₆₋₈alkyl-F, C₆₋₈alkyl-CF₃, C₆₋₈alkyl-CF₂-CF₃, C₆₋₈alkyl-SH, C₆₋₈alkyl, C₆₋₈alkenyl, C₆₋₈alkynyl, C₆₋₈alkyloxy, C₆₋₈alkenyoxy, C₆₋₈alkylthio, C₆₋₈alkenylthio, C₆₋₈cycloalkyl, C₆₋₁₀aryl, C₆₋₈alkyl-C₆₋₁₀aryl, a three to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S; and C₁₋₄alkylheterocyclic monocyclic or bicyclic ring system having in the ring system 3 to 10 atoms with 1-4 of such atoms being selected from N, O and S;

alternatively, R^a and R^b taken together form a five to ten membered heterocyclic monocyclic or bicyclic ring system containing 1-4 heteroatoms selected from N, O and S; and

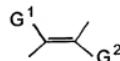
R^a and R^b are each independently selected from the group consisting of H, -(CH₂)₀₋₆SH, -(CH₂)₀₋₆OH, -(CH₂)₀₋₆NH₂, -(CH₂)₀₋₆Cl, -(CH₂)₀₋₆F, -(CH₂)₀₋₆Br, -(CH₂)₀₋₆I, -(CF₂)₀₋₅(CF₃), -(CH₂)₀₋₆(CF₃), -(CH₂)₀₋₆CN, -(CH₂)₀₋₆NO₂, -(CH₂)₀₋₆CHO, -C₁₋₆alkyl, -C₆₋₈alkyl-N(R^a)(R^b)₀₋₁, -C₆₋₈alkyl, -(CH₂)₀₋₆CH=(CH)₀₋₁-(CH₂)₀₋₆(CH₃)₀₋₁₁, -O-C₁₋₆alkyl-N(R^a)(R^b)₀₋₁, -C₆₋₈alkyl, -C₆₋₈alkyl-O-C₁₋₆alkyl, -C₆₋₁₂alkyl-O-C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-O-C₁₋₆alkyl, -C₂₋₁₂alkenyl, -C₆₋₁₂alkyl-O-C₁₋₆alkinyl, -C₆₋₁₂alkinyl-O-C₁₋₆alkyl, -C₆₋₁₀aryl, -C₆₋₁₂alkyl-O-C₆₋₁₀aryl, -S(=O)₀₋₂C₆₋₈alkyl-N(R^a)(R^b)₀₋₁, -C₆₋₈alkyl, -C₆₋₈alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₆₋₁₂alkyl-S(=O)₀₋₂C₂₋₁₂alkenyl, -C₂₋₁₂alkenyl-S(=O)₀₋₂C₁₋₆alkyl, -C₆₋₁₀aryl, -C₆₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkinyl, -C₆₋₁₂alkinyl-S(=O)₀₋₂C₁₋₆alkyl, -C₆₋₁₀aryl, -C₆₋₁₂alkyl-S(=O)₀₋₂C₁₋₆alkyl, -C₆₋₁₂alkenyl-C₆₋₁₀aryl, -C₂₋₁₂alkenyl-C₆₋₁₀aryl, -COOH, -C₆₋₈alkyl-COO-C₁₋₆alkyl, -C₆₋₈alkyl-COO-C₂₋₁₂alkenyl, -C₆₋₈alkyl-COO-C₂₋₁₂alkinyl, -C₂₋₁₂alkenyl-COO-C₁₋₆alkyl, -C₂₋₁₂alkinyl-COO-C₁₋₆alkyl, -C₆₋₁₀aryl monocyclic or bicyclic ring structure, and a three to ten membered heterocyclic monocyclic or bicyclic

heterocyclic ring structure containing 1-4 heteroatoms selected from N, O and S.

6. A compound of claim 1, wherein Q is selected from the group consisting of:



and



5

E, A, and T are independently selected from the group consisting of phenyl, naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl, imidazolyl and triazole, indolyl, and quinolinyl, which are independently substituted with 0 to 4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl, C₃₋₆cycloalkyl, -O-C₁₋₆alkyl, C₁₋₆alkenyl,
10 -O-C₁₋₆alkenyl, C₁₋₆alkinyl, -O-C₁₋₆alkinyl, C₆₋₁₀aryl, -O-C₆₋₁₀aryl, C₁₋₆alkylC₆₋₁₀aryl, -O-C₁₋₆alkylC₆₋₁₀aryl, -COOH, -COO-C₁₋₆alkyl, and any two R groups taken together form a methylenedioxy or ethylenedioxy group;

Z is selected from the group consisting of -(CH₂)₀₋₆O-(CH₂)₀₋₆-,

15 -(CH₂)₀₋₆C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=O)-O-(CH₂)₀₋₆-, -(CH₂)₀₋₆-O-C(=O)-(CH₂)₀₋₆-,
-(CH₂)₀₋₆-C(=N(R³⁶))-(CH₂)₀₋₆- , -(CH₂)₀₋₆-C(=O)-N(R³⁶)-(CH₂)₀₋₆-,
-(CH₂)₀₋₆N(R³⁶)-C(=O)-(CH₂)₀₋₆- , -(CH₂)₀₋₆-S-(CH₂)₀₋₆- , -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-,
-(CH₂)₀₋₆S(O)₂-N(R³⁶)-(CH₂)₀₋₆- , -(CH₂)₀₋₆-N(R³⁶)-SO₂-(CH₂)₀₋₆- , and
-(CH₂)₀₋₆N(R³⁶)-SO₂-N(R³⁷)-(CH₂)₀₋₆-; and

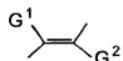
20 M is selected from the group consisting of -(CH₂)₀₋₆-O-(CH₂)₀₋₆-,
-(CH₂)₀₋₆C(=O)-(CH₂)₀₋₆- , -(CH₂)₀₋₆-C(=O)-O-(CH₂)₀₋₆- , -(CH₂)₀₋₆-O-C(=O)-(CH₂)₀₋₆-,
-(CH₂)₀₋₆-S-(CH₂)₀₋₆- , -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆- , -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-,
-(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆- , -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆- , and
-(CH₂)₀₋₆-S(O)₂-N(R³⁸)-(CH₂)₀₋₆-.

25

7. A compound of claim 1, wherein Q is selected from the group consisting of:



and

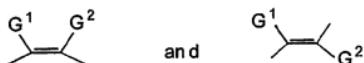


- E, A, and T are independently selected from the group consisting of phenyl, 2-pyridyl, 3-pyridyl, 4-pyridyl, oxazolyl, isoxazolyl, thiazolyl, isothiazolyl and imidazolyl, which are substituted with 0 to 4 R groups independently selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl,
 5 C₃₋₈cycloalkyl, and -O-C₁₋₆alkyl;

Z is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-N(R³⁶)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-N(R³⁶)-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-N(R³⁶)-(CH₂)₀₋₆ and -(CH₂)₀₋₆-N(R³⁶)-SO₂-(CH₂)₀₋₆;

M is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-,
 10 -(CH₂)₀₋₆-S(O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆-, -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆ and -(CH₂)₀₋₆-N(R³⁸)-(CH₂)₀₋₆.

8. A compound of claim 1, wherein Q is selected from the group consisting of:



- 15 E, A, and T are independently selected from the group consisting of phenyl, 2-pyridyl, 3-pyridyl and 4-pyridyl, which are substituted with 0 to 4 R groups which are independently a member selected from the group consisting of H, -OH, halogen, trihalomethyl, -CN, -NO₂, C₁₋₆alkyl and -O-C₁₋₆alkyl;

Z is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-N(R³⁶)-(CH₂)₀₋₆ and -(CH₂)₀₋₆-N(R³⁶)-C(=O)-(CH₂)₀₋₆; and

M is selected from the group consisting of -(CH₂)₀₋₆-C(=O)-(CH₂)₀₋₆-, -(CH₂)₀₋₆-S(O)₂-(CH₂)₀₋₆, and -(CH₂)₀₋₆-C(=N(R³⁸))-(CH₂)₀₋₆.

9. A compound of claim 8, wherein
 Z is selected from the group consisting of -C(=O)-N(R³⁶)- and -N(R³⁶)-C(=O)-;
 25 and
 M is selected from the group consisting of -C(=O)-, -S(O)₂-, and -C(=N(R³⁸))-.

10. A pharmaceutical composition comprising a compound of claim 1 and a pharmaceutically acceptable carrier.
11. A pharmaceutical composition comprising a compound of claim 2 and a pharmaceutically acceptable carrier.
12. A pharmaceutical composition comprising a compound of claim 3 and a pharmaceutically acceptable carrier.
- 10 13. A pharmaceutical composition comprising a compound of claim 4 and a pharmaceutically acceptable carrier.
14. A pharmaceutical composition comprising a compound of claim 5 and a pharmaceutically acceptable carrier.
- 15 15. A pharmaceutical composition comprising a compound of claim 6 and a pharmaceutically acceptable carrier.
16. A pharmaceutical composition comprising a compound of claim 7 and a pharmaceutically acceptable carrier.
- 20 17. A pharmaceutical composition comprising a compound of claim 8 and a pharmaceutically acceptable carrier.
- 25 18. A method for the prevention or treatment of a condition in a mammal characterized by undesired thrombosis comprising the step of administering a therapeutically effective amount of a compound of claim 1.
- 30 19. A method for the prevention or treatment of thrombosis of claim 18, wherein the condition is selected from the group consisting of unstable angina, refractory angina, myocardial infarction, occlusive coronary thrombus, transient ischemic attacks, thrombotic stroke, embolic stroke, disseminated intravascular coagulation, septic shock, deep venous thrombosis, pulmonary embolism, reocclusion or restenosis of reperfused coronary arteries, thromboembolic complications of surgery and peripheral arterial occlusion.

20. A method for inhibiting the coagulation of a biological sample comprising the step of administering a compound of claim 1 to the biological sample.